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Protocol for the Assessment of National Communicable Disease Surveillance and Response Systems

Guidelines for Assessment Teams

World Health Organization
Department of Communicable Disease Surveillance and Response

TABLE OF CONTENTS

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ACRONYMS

ADB	African Development Bank
AFP	Acute Flaccid Paralysis
AIDS	Acquired Immune Deficiency Syndrome
CDC	Centers for Disease Control and Prevention
DANIDA	Danish Development Aid
DFID	Department for International Development
EU	European Union
FETP	Field Epidemiology Training Programme
GIS	Geographic Information System
HIV	Human Immunodeficiency Virus
HQ	World Health Organization Headquarters
IDS	Integrated Disease Surveillance
MoH	Ministry of Health
NGO	Non-Governmental Organization
PoA	Plan of Action
RO	World Health Organization Regional Office
TB	Tuberculosis
UN	United Nations
UNAIDS	United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WHO/AFRO	World Health Organization Regional Office for Africa
WR	World Health Organization Country Representative
WRO	World Health Organization Country Representative's Office

INTRODUCTION

What should this document be used for?

This manual has been developed for World Health Organization (WHO) staff and partners carrying out assessments of national communicable disease surveillance systems with a national team. It will help WHO staff and consultants guide a group of national professionals through an assessment of the overall structure and performance of surveillance activities in a Member State. This assessment should lead to a standardised report and an agreed plan of action. The plan of action will include a practical timetable for implementation, agreed upon by the Ministry of Health (MoH), WHO and by other partners who may be contributing to the process.

This generic document represents a prototype for the assessment of surveillance and response systems, and may require adaptation in the field. It contains guidance on planning and carrying out an assessment with practical tools such as work group exercises, tables shells and spreadsheets for data collection. The manual also outlines a suggested reporting format with tables for implementation plans.

What is the national surveillance system?

Surveillance is the process of systematic collection, collation and analysis of data with prompt dissemination to those who need to know, for relevant action to be taken. A well functioning disease surveillance system provides information for planning, implementation, monitoring and evaluation of public health intervention programmes. Surveillance for communicable diseases is a part of public health surveillance, which in turn is part of the wider health information system. The objective of the surveillance system and use of the information determines the data collected and the speed of information flow within the system. Early warning of epidemics is essential for effective and rapid control, while information on endemic communicable disease is essential for monitoring the disease. Either way, information on priority communicable diseases is critical for control. Many countries have developed surveillance capacities to monitor diseases with a high burden, to detect outbreaks of epidemic-prone disease and to monitor progress towards national or international control or eradication targets. In this sense, surveillance of communicable diseases is a national function.

Why assess the national surveillance system?

Many countries' surveillance systems have developed in an uneven way, with various surveillance activities funded and managed by different control programmes sometimes based in different institutions (ex. MoH, academic or research institutes, NGOs). Some vertical programmes have kept the surveillance function close to the control function, which is essentially good for the control of a specific disease. On the other hand, overall surveillance functions in a country can become badly disjointed and inefficient. In such cases, field workers participate in multiple systems, use different surveillance methods, terminology, reporting forms and frequency, based on varied training received. This approach may result in extra costs and often leads to work overload and de-motivation for the health worker.

In some cases surveillance is far removed from the control efforts: data are collected on a large number of health events, many of which do not constitute priorities for the country. Detection and reporting of cases and epidemics are rarely carried out on time, and analysis, interpretation and use of available data at all levels for decision making and action is poor.

Each country needs to periodically assess its overall surveillance system so that this continues to reflect national disease control priorities, remains efficient and takes advantages of opportunities for the integration of activities. New surveillance methods and techniques that improve the efficiency of the system should be considered and included in the surveillance system strengthening process.

The World Health Organization (WHO) is promoting a more co-ordinated and synergistic approach to the surveillance and control of communicable diseases. With this in mind, the proposed assessment attempts to deliver an integrated system, using practical and participatory approaches.

What is a multi-disease or integrated approach to disease surveillance?

Surveillance activities for different diseases involve similar functions and very often use the same structures, processes and personnel. A multi-disease approach to disease surveillance aims at establishing well co-ordinated action-oriented surveillance systems that seek opportunities for integration of core and support surveillance functions when appropriate, maximize synergies, take advantage of new tools, build on existing resources, and benefit from successful initiatives. This permits sharing of experiences and resources, avoids duplication of efforts, reduces work load at lower levels, addresses the needs of programmes, and focuses efforts. This approach calls for a co-ordinated approach to data collection, analysis, interpretation and dissemination. It

envisages integration of surveillance activities at all levels when appropriate, while support targeted to surveillance are streamlined and directed in a co-ordinated way.

Disease surveillance should be based on collecting only the information that is required to achieve the control objectives. The data required may differ from disease to disease. For example, the rate of treatment completion and the cure rate are essential indicators in TB surveillance; in HIV/AIDS surveillance the proportion of the population positive for HIV should be monitored as well as the number of new cases of AIDS. Although surveillance may have very specific information needs, many elements of data collection are very similar and the data source is often the same individual or facility. The challenge is to identify where synergy is possible, and exploit this, while at the same time recognizing the needs of some programmes for supplementary information or alternative methods of surveillance.

Specialized surveillance systems (e.g. for acute flaccid paralysis — AFP, or for HIV/AIDS) are important, especially when surveillance methods are complex and the systems have specific information needs. All surveillance systems however, involve the same universal functions (case detection, confirmation, reporting, analysis, investigation, response, feedback and monitoring), and common support functions, (e.g. training, supervision, communications, other resources). It is possible to look at the system as a whole and approach development and strengthening in a co-ordinated way. Opportunities to use common reporting forms, the use of one simple data entry system for multiple diseases and recourse to common communication channels need to be explored. Where possible, all reports should go from district level to a single office at national level. Training and supervision should be integrated and a common feedback bulletin used. Computers, vehicles, fridges etc. can be shared. Instead of competing for funds, different surveillance programmes can work together in appealing for funds.

There may also be differences in the speed at which data and information flow through the system, and the speed of response required for that information. Thus, for the system to function as an “early warning system”, reporting, confirmation, decision making and response should be rapid. On the other hand, for endemic diseases, the aim may be to carefully consider the data collected in order to adjust or target the control programme. The national surveillance system should therefore be able to accommodate both needs, and may require more than one speed for reporting.

In other situations, surveillance that is well developed in one programme may act as a “driving force”, leading to the improvement of other

surveillance activities. It is important to identify these "driving forces" during assessment and to take advantage of them.

What are the aims and objectives of the assessment?

The current approach brings together all those in a country who have responsibility for the surveillance of communicable diseases, with the aim of formally assessing the national disease surveillance systems to strengthen them, using an integrated or multi-disease approach. This assessment should lead to an agreed prioritised plan of action for bringing about improvements in system performance that address gaps identified during the assessment.

The objectives of the assessment are:

1. To obtain baseline information for implementing a co-ordinated, multi-disease approach to disease surveillance that allows measurement of progress made in surveillance strengthening efforts
2. To determine country needs as regards strengthening the surveillance system for communicable disease prevention and control
3. To identify gaps and opportunities in performing the core and support functions of surveillance, and assessing the resources available for these
4. To enable the development of a prioritised action plan, based on the assessment findings.

What should be assessed?

The team should decide on the priority diseases for surveillance and response.

The assessment will be with regard to the structure, organization, processes and output of surveillance and response systems. The capacity for core functions and support functions of surveillance and response at every level of the health care system will be examined. Both core functions and support functions are matched against objectives outlined in a pre-assessment workshop. Opportunities to integrate, co-ordinate and synergize surveillance should be identified during the whole process of assessment, as well as the possibility to use new techniques such as health mapping for surveillance. The attributes of a good surveillance system should be considered (simplicity, flexibility, acceptability, sensitivity, predictive value positive, representativeness, and timeliness) as well as the cost of the system (See Annex 1 for definitions).

1. Priority diseases

Surveillance should ideally centre on priority diseases within the country. Many countries engage in the surveillance of a very large number of diseases. The number of diseases under surveillance continually increases, but the need for this surveillance is often not assessed. In other countries these lists have been inherited from previous administrations. Any assessment of national surveillance should examine all the entities under surveillance and ask the question "is this activity a priority?" Many surveillance systems have a long history where new diseases have been added, while diseases that are no longer a priority have not been deleted. In other cases, countries may lack surveillance in critical areas, especially as diseases can emerge over time as problems that were unforeseen when surveillance was initially developed.

2. Assessing structure

The organization of the surveillance and response systems should be described at the central, intermediate, district, health facility levels and the community level where appropriate. The relationship between the different levels should be described and discussed, as well as the resources (input) that are used for activities at these levels.

3. Assessing processes and capacity for surveillance and response

For each priority disease or group of diseases, the capacity to carry out core and support functions of surveillance and response should be reviewed. The procedure for information flow should be described and its use for public health action assessed. Duplication in the implementation of these functions should be noted. The capacity of the national surveillance system is determined by the ability of the system to monitor priority health events adequately.

The core activities and support functions of the surveillance system will be assessed at all levels of health care (central, regional/provincial, district or equivalent, health facility). The core activities for an effective surveillance for any health event are:

- Detection (identifying cases and outbreaks)
- Registration
- Confirmation (epidemiological and laboratory confirmation)
- Reporting (early warning and routine)
- Analysis and interpretation (preparing and periodically updating graphs, tables and charts to describe time, person and place for reported diseases and conditions, identifying unusual trends or patterns or the exceeding of a threshold value, interpreting results, discussing possible public health action)

- Response
  - Control/response: case management, contact tracing, infection control measures, immunisation activities, improvement of preventive and control measures (vector control, environmental control), community information and education, alerting nearby areas and districts
  - Outbreak investigation: case finding (records, active surveillance), collection and transport of specimens, confirmatory testing, interpretation of results (epidemiological and laboratory)
  - Programme adjustment
  - Changes in policy and planning
- Feedback
- Evaluation and monitoring.

These activities are made possible by a number of support functions that lead to better performance of the core surveillance activities and these should also be assessed:

- Setting standards (e.g., case definitions, standard case management guidelines, standard procedures for investigation)
- Training (surveillance, epidemiology, laboratory)
- Supervision
- Communications systems (e.g. radio, fax, e-mail, phone, health updates)
- Providing resources (human – appropriate number with adequate skills and competencies; material - vehicles, laboratory equipment, supplies etc; financial).

4. Assessing output

The assessment will provide information on the effectiveness and efficiency of the system(s) in monitoring communicable diseases for prevention and control. The system attributes should be considered (simplicity, flexibility, completeness, sensitivity, timeliness, representativeness). The output of the system (ex. reports) should be able to reflect whether or not the system is achieving its objectives.

5. Integration/Co-ordination/Synergy

Integration refers to the co-ordination of all surveillance activities and of the support functions common to all control programmes (e.g., data collection, training, and supervision) while leaving follow-up actions to the

different specific intervention programmes. Many functions in the surveillance of most communicable disease are similar and as such offer opportunities for integration. The level of integration/synergy in the national surveillance system can affect the performance, cost and sustainability of the system. Opportunities for integration, synergy and co-ordination should be identified during the assessment for diseases under surveillance.

6. Laboratories

Laboratories are essential to disease surveillance and most epidemiological surveillance systems require a laboratory component for confirmation. These serve both for the routine confirmation of clinical syndromes and for rapid confirmation of the causative agent in outbreaks. In some cases the surveillance is completely laboratory-based (example: surveillance of anti-microbial resistance). Assessment of the laboratory capacity (availability, functionality and level of sophistication) should be undertaken in order to determine the role of the laboratory at a given level for surveillance.

7. Health mapping: the geographic information system (GIS)

GIS provides an excellent means of collecting and managing epidemiological surveillance and programmatic information. These data can easily be visualised and analysed in a map, showing trends and inter-relationships that would be more difficult to discover in tabular format. GIS allows decision-makers and planners to visualise the health situation of populations easily in relation to the surrounding environment and the existing health and social infrastructures such as health facilities, schools and water supply. Specific diseases and health events can be mapped in relation to the number and location of health facilities, in order to create a comprehensive picture of the health situation of a given community, district or nation. When mapped together, this information creates a powerful tool not only for monitoring surveillance results but also for operational planning and for the targeting interventions and resources to areas/communities in need. This database serves as a common geographic platform within which all surveillance and programmatic data can be concentrated at the most appropriate level. As such GIS constitutes itself as an entry point for integrating disease-specific surveillance approaches.

8. Communication

Good communication systems are critical for effective surveillance. In some countries, communication offices are available at varying level of the health care system, with strategic plans, emergency media response plans and trained staff. Others have resources such as computers, appropriate software, with email connections. Many countries use computerized systems for data

collection, reporting, analyzing, feedback and dissemination. Data reported through appropriate electronical system would facilitate the integration of surveillance activities especially if the system is user-friendly, does not use multiple and different data sets that results in extra work load and subsequent abandoning. Radio calls are used in other remote areas. Communication systems should be assessed, taking into account local realities. A description of the communication practices, as well as resources should be made, and needs identified. The outputs of these systems should be assessed (health bulletins, reports, scientific publications, audio/video productions) and the content should be considered (health topics, surveillance data, outbreak investigation, recommendations, etc).

What should guide the assessment?

The procedure proposed in this guideline aims to involve the MoH as the key player in the assessment. The role of the external team is to facilitate the process using standard methods and tools, as recommended by WHO. The end result should be a national plan designed by nationals. This may not result in the perfect plan by external standards but will have a higher chance of success. The goal is to agree on a plan of action (PoA) and to establish a follow-up programme.

The government should accept that, in the long run, surveillance is a core public health function and as such should be funded within the health budget. Political commitment and financial support by the government is essential to obtain sustainable change within the surveillance system if this is to lead towards improvements in disease control. It is important that the solutions to problems are decided by the nationals, and perceived as relevant to the realities within the national health service. External funds from WHO or other donors should be used as a means to get things started in crucial domains.

The procedure should be to involve representatives of the MoH, the individual surveillance focal points for each health event and workers from each level of the system in a facilitated national process.

Procedures, activities and timetable of the assessment

The guideline below outlines a 17 working day (3 weeks) schedule to complete the assessment. This is only a guide since many factors such as the size of the country, the logistics for fieldwork and the availability of senior MoH staff may influence the schedule.

Schedule for national surveillance assessment

PHASE I* Planning	Before assessment	Planning the mission
PHASE II Step 1 Pre-assessment	DAYS 1-3	Pre-assessment facilitated workshop to examine surveillance priorities and objectives. Further sensitise on the multi-disease approach to surveillance, agree on the list of national priority diseases, adapt the assessment protocol, plan fieldwork
Step 2 Training	DAYS 4-6	Training of assessment team members and data managers. Pre-test and adapt assessment tools; finalise logistical requirements, travel to assessment sites
Step 3 Field assessment	DAYS 7-12	Field assessment and travel
Step 4 Analysis and report	DAYS 13-16	Write a preliminary report using a standard format on the assessment findings
Step 5 Findings and follow-up schedule	DAYS 17	Post-assessment workshop to present preliminary findings; discuss follow-up schedule and agree to it
PHASE III National Plan of Action	After assessment: 4 – 8 Weeks	Workshop to elaborate National Plan of Action and implementation framework
PHASE IV Follow up		Follow-up implementation of the Plan of Action

*The duration of each phase and step may vary depending on the size of the country.

PHASE I: Planning the mission

Planning the assessment is essential for the success of the mission. The process begins when a country requests assistance from WHO to carry out an assessment of its communicable disease surveillance system(s). The country is asked to set up a co-ordinating body with a focal person in the MoH and a proposed time frame for the assessment. Key partners including someone from the WHO/WRO should be part of the co-ordinating body. The WHO Country Office should also decide on a counterpart to the MoH focal person.

The WR Office and the MoH should begin work on logistic requirements (transport, lodging, finances, personnel, office facilities and supplies etc) for the assessment (See Annex 2.0. and 2.1. for mission planning spreadsheet and logistic checklist).

Before the assessment a co-ordination meeting should be held between all the external consultants, preferably within the country, together with the WR. This will provide the opportunity of gaining a common understanding of the assessment as well as getting a briefing from the WR about the country. A tentative work plan of the assessment should be drafted, outlining the roles and responsibilities of team members.

It is also crucial to learn about the health and economic system in the country (Recommended documents for reading include WHO, UNAIDS and UNDP Country Profiles as well as Demographic and Health Surveys).

A meeting should be held as soon as possible with the national team. The participation of senior decision-makers at the MoH in all steps of the assessment is critical: if decision-makers are not part of the assessment, the recommendations will not gain the necessary political support within the government. The WHO country representative should therefore ensure this involvement. The WR should assign a focal point in the WHO office to act as liaison before the mission, to take an active part in the process and to follow up on an ongoing basis with the MoH after the assessment. In some countries, the WHO office now has a country epidemiologist who liaises directly with the MoH. It may be useful to have a joint planning sheet for the MOH and WRO (See Annex 2.2).

Composition of the assessment team: External team (Members not resident in the Country)

The external team should ideally include an epidemiologist, a laboratory expert, a GIS expert, and the designated WHO Country Office focal person. This team may be drawn from the WHO Country Office, the WHO/Regional Office, WHO/HQ and other partners. A team leader should assume overall responsibility for the mission as well as for implementation and follow-up. The external team will facilitate the assessment process and participate in the field assessment. In collaboration with the national team leader, the external team leader will co-ordinate the assessment process, including the writing of the assessment report. Everyone should be familiar with the Terms of Reference (TOR) for the assessment (See Annex 3.1 for prototype TOR).

National team

The national team shall be drawn from various levels of the health services and from all major disease control programmes, national institutions such as Field Epidemiology Training Programmes (FETPs) and NGOs. Broad national representation will ensure a more equitable assessment and allow the various players to interact professionally. It is essential that all team members be briefed on the objectives of the assessment. The MoH shall designate a national counterpart to the external team leader and a focal person who will liaise with the WHO focal person.

PHASE II: The assessment

Step 1: Pre-assessment facilitated workshop with national team

A courtesy visit to the Minister of Health should take place, to brief her/him on the objectives of assessment before the workshop takes place.

The aim of the workshop is to take the group through a process of examining disease priorities and surveillance objectives, agreeing on the protocol and adapting generic tools for the field assessment of surveillance system(s) performance. The workshop includes several activities, each of which leads to a product that may be used for the next activity. The activities themselves are part of assessment and the product of each session will provide useful information for the final report. The workshop usually lasts 3 days. The starting and finishing times for each day should be determined by the local working day.

Activities and products from pre-assessment workshop

Activity	Products
1. Plenary session on the multi-disease approach and the objectives of assessment (Annexes 3)	1.1 MoH decision-makers sensitised on the multi-disease approach and on assessment objectives
2. Exercise: setting priorities for communicable diseases (Annex 4)	2.1 Adoption of list of Priority communicable diseases
3. Inventory of current surveillance activities (Annex 5)	3.1 Table summarizing all current surveillance activities
4. Surveillance objectives and indicators (Annex 6)	4.1 A table summarizing surveillance objectives and indicators for each priority disease under surveillance
5. Surveillance process and task description, by health service level (Annex 7)	5.1 Flow diagrams to illustrate surveillance process 5.2 Table for each priority disease showing the tasks that are carried out at each level of the system
6. Adaptation of tools for field assessment (Annex 8 and 13)	6.1 Indicators to test system performance 6.2 Checklist/questionnaires for data collection
7. Selection of assessment sites, finalisation of teams, organization, and scheduling of visits (Annex 9)	7.1 Sample sizes and map showing districts and facilities to be visited 7.2 Table showing organization of each team, sites to be visited, and timing
8. Logistics for field visits (Annex 9.1)	8.1 Table showing transport, security, accommodation, financial and administrative arrangements for the team

Step 2: Training of assessment teams

Training of the assessment team is a continuation of the facilitated workshop and comprises consensus building, pre-testing and revision of the tool. During this training session, team members are expected to examine the data collection tools and get a clear and common understanding of the questions and of what exactly to look for while conducting the interview. The training should include a demonstration of various sample analyses. The team leader moderates the training sessions in collaboration with the national counter part.

The content of the training is as follows:

- Conduct during field visit
- Information meeting with local team
- Detailed organization of assessment
- Data collection process: questionnaire use (quality control)
- Data entry, cleaning of data and draft analysis
- Field testing, feedback and adaptation of the assessment tools.

Activities and products from training workshop

Activities	Products
Briefing on expectations on arrival and contacts with local authorities on site	Conduct (see Annex 9.3) and administrative arrangements known
Information meeting with local team	Content and conduct of the meeting mastered
Detailed organization of the assessment (Role of team members, number and types of sites for assessment, tracking questionnaires, identification of interviewees, appointments, transport, security, accommodation etc)	Detailed organization of assessment known
Data collection process: checklist/questionnaire use (filling, quality control)	1. Questions understood 2. Data collection mastered
Data entry, cleaning and draft analysis	1. Capacity built for data entry and cleaning 2. Draft analysis programme adopted
Field testing, feedback and adaptation of the assessment tools	1. Assessment tools field-tested 2. Assessment tools adapted

Step 3: Field assessment

The main aim of the field visits is to gather information on the pre-designed tools to carry out a formal assessment of the performance for all components of the surveillance system. The field assessment should last 3 to 7 days.

Advance arrangements and planning are critical to the success of this step. Preparations for the field visits should be made by the MoH with the support of the WHO office, prior to the arrival of the assessment team.

The site visits should be carried out according to an agreed timetable; they may involve a team visiting both peripheral and intermediate levels. Each type of site visited will require a specific checklist/questionnaire. Working with the tools developed will involve asking questions, observing practices and gathering documentation of activity.

The approach at each site visited shall be to:

- Have an initial meeting to introduce the objectives of the assessment and to ask relevant questions
- Obtain informal feedback on problems and issues that workers themselves have identified regarding surveillance
- Identify examples of good and bad practice
- Consult reports of outbreaks or other investigations
- Make sure that checklists/questionnaires are filled in legibly
- Record and if possible resolve any problems or ambiguities in the tools
- Clean data
- Enter data into a pre-prepared database.

The assessing team should meet regularly at the end of the day or once every two days to document the problems encountered, the challenges, strengths and weakness of the sites visited, the systems assessed, the laboratory linkages to surveillance etc. This qualitative analysis would contribute to the interpretation of the quantitative analysis.

Step 4: Analysis and preliminary report writing

Writing the report should be a team activity, usually lasting 3 days and involving:

- Analysis of the products of the pre-assessment workshop
- Analysis of data from the field visits, both qualitative (impressions obtained during the visits) and quantitative (replies to questionnaires)
- Identification of strengths, weaknesses, opportunities and threats in the national surveillance and response system
- Identification of solutions, opportunities, threats to integration

- Recommendations to strengthen the capacity, improve co-ordination, build synergies, and take advantage of driving forces for the national surveillance and response system.

The assessment report (see prototype in Annex 11.1) should use the standard surveillance terms provided in Annex 1.

The report should refer to the priority diseases and to capacity and co-ordination/integration of the surveillance system(s).

Priority Diseases

Are current surveillance activities adequate in terms of the diseases covered and the population under surveillance? The revised list of priority diseases should be included.

Capacity

For this section the capacity should refer to the performance of the core surveillance activities and the surveillance support functions. Field visits will be the source of this information and as such this section will reflect the surveillance methods.

Analysis of capacity may be undertaken for:

- All diseases
- Indicator diseases (e.g. measles for EPI, gonorrhoea for STIs and cholera for epidemic-prone diseases)
- Groups of diseases (e.g. vaccine-preventable diseases in EPI).

This will depend on how many diseases were included in the field assessment.

Co-ordination/Integration

The level of co-ordination/integration should be reported in terms of the core functions and support functions. Do disease surveillance systems/control programmes use the same mechanisms to carry out any of the functions and what are the areas where further synergy would be beneficial?

Step 5: Post-assessment workshop to present preliminary findings

A major challenge in strengthening surveillance systems is the actual implementation of change. One of the most difficult tasks in surveillance assessment and strengthening is to transform a report with an implementation plan into real activities over a period of time. One way of doing this is:

- To get political commitment into the process
- To get the MoH to commit resources to the process
- To identify critical activities that would benefit from outside technical support
- To follow up on all commitments systematically and ensure a co-ordinated implementation process.

To this end, a one-day workshop at the end of the assessment may prove invaluable in bringing together decision-makers from the different parties and stakeholders in order to obtain a clear agreement on the activities to be carried out and supported. These activities should have a timetable and identify responsible individuals and resources.

Attendance at the end of assessment workshop should include:

- Ministry of Health
- World Health Organization
- Donors (e.g., ADB, USAID, EU, DANIDA, DFID)
- Other UN agencies (e.g., UNDP, UNICEF)
- Others partners (e.g., CDC, NGOs, academic institutions, representatives of private practitioners)
- Laboratory Institutions outside the Ministry of Health.

The workshop should include the following way:

1. Presentation of the draft report by the assessment team
2. Discussion of the assessment findings
3. Agreement on future activities (i.e., timeline for the final assessment report and Plan of Action workshop)
4. Consensus of all stakeholders to consider the implications of the assessment findings and recommendations in the execution of their duties and in their surveillance strengthening efforts.

PHASE III: Workshop to elaborate plan of action

The workshop should take place 1-2 months after the assessment. During this time, the preliminary report should be finalised and circulated to all concerned.

Participants coming from all levels of the health system (central, intermediate and district including health facilities) should elaborate a draft plan of action. This working group should:

- Prepare a draft implementation plan and agree on activities and budget
- Agree on the final implementation plan with a prioritised list of activities and proposed timetable and an allocation of responsibilities
- Agree on follow-up method and schedule.

The implementation plan should centre on priority activities that can improve the surveillance and response systems (see PoA matrix Annex 13). This plan will be presented at a one-day session on the last day of the workshop for discussion and approval.

The implementation plan should:

- Identify priority activities
- Set timetables for the activities
- Identify the person or agency responsible for each activity and for overall implementation
- Estimate costs
- Identify what percentage of the costs are to be borne by the Government
- Identify indicators of activity implementation and success
- Suggest a process of formal follow-up and evaluation of implementation both
  - Routinely through an update/monitoring tool
  - Formally through a follow-up evaluation at least once a year.

Attendance at the final session of the Plan of Action workshop should include:

- Ministry of Health
- World Health Organization

- Donors (e.g. ADB, USAID, EU, DANIDA, DFID)
- Other UN agencies (e.g. UNDP, UNICEF)
- Other partners (e.g. CDC, NGOs, academic institutions, representatives of private practitioners)
- Laboratory Institutions outside the Ministry of Health.

PHASE IV: Follow-up of the implementation of the multi-disease approach to surveillance

Follow-up is critical to the success of the process. The MoH should provide regular standardised updates on the progress and on the problems encountered. WRO will send regular progress reports to the Regional Office/Head Quarters.

WHO and partners will carry out an external evaluation of the implementation of the surveillance and response strengthening efforts, as well as the multi-disease approach. It is suggested that a midterm (2^{nd} to 3^{rd} year) review and a 5-year external review of the progress of implementation of the objectives in the Action Plan should be undertaken. Internal (in-country) reviews should be undertaken annually.

LIST OF ANNEXES

ANNEX 1.0

SURVEILLANCE DEFINITIONS

These definitions are standardized by WHO and as such are referred to in the guidance below. All reports to and by WHO should preferably use these terms as defined in this glossary in order to improve standardization.

ACCEPTABILITY Acceptability is measured by the willingness of persons conducting surveillance and those providing data to generate accurate, consistent and timely data.

ACTIVE CASE FINDING The process of seeking out cases or health event under surveillance (e.g. house visits by community workers to identify cases of tuberculosis, active searching of medical records to identify cases of acute haemorrhagic fever).

ATTACK RATE The cumulative incidence of infection in a group observed over a period during an epidemic. This "rate" can be determined empirically by identifying clinical cases and/or by means of seroepidemiology. Because its time dimension is uncertain or arbitrarily decided, it should probably not be described as a rate. *(Last JM, A Dictionary of Epidemiology, 2001).*

CARRIER A person or animal that harbours a specific infectious agent in the absence of discernible clinical disease and serves as a potential source of infection. The carrier state may occur in an individual with an infection that is inapparent throughout its course (known as healthy or asymptomatic carrier) or during incubation period, convalescence, and post convalescence of an individual with a clinically recognisable disease (known as incubatory carrier or convalescent carrier). The carrier state may be of short or long duration (temporary or transient carrier or chronic carrier). *(Last JM, A Dictionary of Epidemiology, 2001).*

CASE A person who has the particular disease, health disorder, or condition which meets the case definitions for surveillance and outbreak investigation purposes. The definition of a case for surveillance and outbreak investigation purpose is not necessarily the same as the ordinary clinical definition. *(Adapted from Last JM, A Dictionary of Epidemiology, 2001).*

CASE CLASSIFICATION Gradations in the likelihood of being a case (e.g., suspected / probable / confirmed). This is particularly useful where early reporting of cases is important (e.g., Ebola haemorrhagic fever) and where there are difficulties in making definite diagnoses (e.g., specialized laboratory tests required).

CASE DEFINITION A set of diagnostic criteria that must be fulfilled for an individual to be regarded as a case of a particular disease for surveillance and outbreak investigation purposes. Case definitions can be based on clinical criteria, laboratory criteria or a combination of the two with the elements of time, place and person.

CASE-FATALITY RATE The proportion of cases of a specified condition which are fatal within a specified time. *(Adapted from Last JM, A Dictionary of Epidemiology, 2001).*

$$\text{Case-fatality rate} = \frac{\text{Deaths from a given disease in a given period x 100}}{\text{Diagnosed cases of that disease (in the same period)}}$$

CLUSTER Aggregation of relatively uncommon events or diseases in space and/or time in amounts that are believed or perceived to be greater than could be expected by chance. *(Adapted from Last JM, A Dictionary of Epidemiology, 2001).*

COMMUNICABLE DISEASE (SYNONYM: INFECTIOUS DISEASE) An illness due to a specific infectious agent or its toxic products that arises through transmission of that agent or its products from an infected person, animal, or reservoir to a susceptible host, either directly or indirectly through an intermediate plant or animal host, vector, or the inanimate environment. (*Last JM, ed. A Dictionary of Epidemiology, 2001*).

CONTACT (OF AN INFECTION) A person or animal that has been in such association with an infected person or animal or a contaminated environment as to have had opportunity to acquire the infection. *(Last JM, A Dictionary of Epidemiology, 2001).*

CONTACT TRACING see active case finding.

EARLY WARNING SYSTEM In disease surveillance, a specific procedure to detect as early as possible any abnormal occurrence or any departure from usual or normally observed frequency of phenomena (e.g. one case of Ebola fever). An Early Warning System is only useful if linked to mechanisms for early response. *(Adapted from Last JM, A Dictionary of Epidemiology, 2001).*

ELIMINATION Reduction of case transmission to a predetermined very low level; e.g., elimination of tuberculosis as a public health problem was defined by the WHO (1991) as reduction of prevalence to a level below one case per million population. (*Last JM, A Dictionary of Epidemiology, 2001).*

EMERGING INFECTIONS A collective name for infectious diseases that have been identified and taxonomically classified recently. In the final quarter of the twentieth century, more than 30 such conditions, many of them capable of causing dangerous epidemics, were recognized. They include human immuno-deficiency virus (HIV) infection, ebola virus disease, hantavirus pulmonary syndrome and other viral haemorrhagic fevers, campylobacter infection, transmissible spongiform encephalopathies, legionnaires' disease, and lyme disease. Some appear to be "new" diseases of humans, others may have existed for many centuries and have been recognized only recently because ecological or other environmental changes have increased the risk of human infection. re-emerging infections are certain "old" diseases, such as tuberculosis and syphilis, that have experienced a resurgence because of changed host-agent-environment conditions. *(Adapted from Last JM, A Dictionary of Epidemiology, 2001*).

ENDEMIC The constant presence of a disease or infectious agent within a given geographic area or population group; may also refer to the usual prevalence of a given disease within such area or group. The expression "endemic disease" has a similar meaning. *(Adapted from Last JM, A Dictionary of Epidemiology, 2001).*

EPIDEMIC [from the Greek επι (upon), δεμος (people)]. The occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of normal expectancy. The community or region and the period in which the cases occur are specified precisely. The number of cases indicating the presence of an epidemic varies according to the agent, size, and type of population exposed, previous experience or lack of exposure to the disease, and time and place of occurrence. *(Adapted from Last JM, A Dictionary of Epidemiology, 2001).*

EPIDEMIC THRESHOLD The number or density of susceptibles required for an epidemic to occur. (e.g. meningococcal meningitis: see exception flagging system). *(Adapted from Last JM, A Dictionary of Epidemiology, 2001).*

EXCEPTION FLAGGING (REPORTING) SYSTEM A manual or automated system of data analysis which calculates thresholds for epidemic or outbreak detection (e.g. the signal given when incidence of meningococcal meningitis in African belt area is 15/100 000/week over 2 consecutive weeks).

EXPOSURE Proximity and/or contact with a source of a disease agent in such a manner that effective transmission of the agent, harmful or protective effects of the agent may occur. *(Adapted from Last JM, ed. A Dictionary of Epidemiology, 2001).*

FEEDBACK The regular process of sending analyses and reports about the surveillance data back through all levels of the surveillance system so that all participants can be informed of trends and performance.

FLEXABILITY Flexibility is a measure of the ability of the surveillance system to be easily adapted to new reporting needs in response to changes in the nature or the importance of the health event, the population monitored, or the resources available.

GENERALIZABILITY/VALIDITY/REPRESENTATIVENESS The degree to which inference can be drawn from the information gathered by the surveillance system to the target population.

GIS An organized collection of computer hardware, software, geographical data and personnel designed to efficiently capture, store, update, manipulate, analyse and display all forms of geographically referenced information. It is first and foremost an information system with a geographical variable, which enable users to easily process, visualize and analyse data or information spatially. GIS can be used to prepare models showing trends in time and space. Satellite imaging and remote sensing have expanded its scope (e.g. to identify regions prone to malaria).

HEALTH EVENT Any event relating to the health of an individual (e.g., the occurrence of a case of a specific disease or syndrome, the administration of a vaccine or an admission to hospital).

INCIDENCE The number of instances of illness commencing, or of persons falling ill, during a given period in a specified population. *(Prevalence and Incidence. WHO Bulletin, 1966,* ***35****: 783-784).*

INCIDENCE RATE The rate at which new events occur in a population. The numerator is the number of new events that occur in a defined period; the denominator is the population at risk of experiencing the event during this period, sometimes expressed as person-time. *(Adapted from Last JM, ed. A Dictionary of Epidemiology, 2001).*

INFECTIOUS DISEASE *SEE* COMMUNICABLE DISEASE

NOTIFIABLE DISEASE A disease that, by statutory/legal requirements, must be reported to the public health or other authority in the pertinent jurisdiction when the diagnosis is made. (*Adapted from Last JM, ed. A Dictionary of Epidemiology, 2000).*

NOTIFICATION The processes by which cases or outbreaks are brought to the knowledge of the health authorities. In the context of the *International Health Regulations*, notification is the official communication of a disease/health event to the World Health Organization by the health administration of the Member State affected by the disease/health event.

OUTBREAK An epidemic limited to localised increase in the incidence of a disease, e.g., in a village, town, or closed institution. (*Adapted from Last JM, ed. A Dictionary of Epidemiology, 2001).*

PERFORMANCE INDICATORS Specific agreed measurements of how participants are functioning within the surveillance or reporting system. These indicators may measure both the process of reporting (e.g., completeness, timeliness) and the action taken in response to surveillance information (e.g., the percentage of cases investigated or surveyed) and the impact of surveillance and control measures on the disease or syndrome in question (e.g., the percentage of outbreaks detected by the system, the drop in the number of cases over a specified time period).

PERIODICITY A repeating pattern of a phenomenon or an event, especially the repetition of comparable values, e.g., seasonal fluctuation in numbers of cases of respiratory infections. *(Last JM, A Dictionary of Epidemiology, 2001).*

PREVALENCE The number of instances of illness or of persons ill, or of any other event such as accidents, in a specified population, without any distinction between new and old cases. Prevalence may be recorded at a stated moment (point prevalence) or during a given period of time (period prevalence). *(Prevalence and Incidence. WHO Bulletin,* 1966; **35**:783-784).

PREVALENCE RATE The total number of all individuals who have an attribute or disease at a particular time (or during a particular period) divided by the population at risk of having the attribute or disease at this point in time or midway through the period. *(Last JM, A Dictionary of Epidemiology, 2001).*

REPORTING COMPLETENESS Proportion of all expected reports that were actually received. It is usually stated as "% completeness as of a certain date" (e.g. if of 30 administrative units in a reporting system 15 submit reports, the reporting completeness is 50%; if of 50 cases of diarrhoea 40 are reported, the reporting completeness is 80%).

REPORTING SYSTEM The specific process by which diseases or health events are reported. This will depend on the importance of the disease and the type of surveillance.

REPORTING TIMELINESS Proportion of all expected reports in a reporting system received by a given date (due date).

SECULAR TREND (Synonym: temporal trend) Changes over a long period of time, generally years or decades. *(Adapted from Last JM, ed. A Dictionary of Epidemiology, 2001).*

SEROSURVEILLANCE The surveillance of an infectious disease through immunological markers of the disease in a population or sub-population (e.g. measuring the presence of HIV antibodies in pregnant women coming for antenatal care).

SENSITIVITY IN SURVEILLANCE The ability of a surveillance or reporting system to detect true health events i.e. the ratio of the total number of health events detected by the system over the total number of true health events as determined by an independent and more complete means of ascertainment.

SPECIFICITY IN SURVEILLANCE A measure of how infrequently a system detects false positive health events i.e. the number of individuals identified by the system as not being diseased or not having a risk factor, divided by the total number of all persons who do not have the disease or risk factor of interest.

SURVEILLANCE The process of systematic collection, orderly consolidation and evaluation of pertinent data with prompt dissemination of the results to those who need to know, particularly those who are in a position to take action *(Adapted from Report of the Technical Discussions at the twenty-first World Health Assembly on National and Global Surveillance of Communicable Diseases, 18 May 1968 — A21/Technical Discussion/*5).

> **SURVEILLANCE, ACTIVE** Surveillance where public health officers seek reports from participants in the surveillance system on a regular basis, rather than waiting for the reports (e.g. telephoning each participant monthly).
>
> **SURVEILLANCE, CASE-BASED** Surveillance of a disease by collecting specific data on each case (e.g. collecting details on each case of acute flaccid paralysis (AFP) in poliomyelitis surveillance).
>
> **SURVEILLANCE, COMMUNITY** Surveillance where the starting point for the notification is from community level, normally reported by a community worker. It can be active (looking for cases) or passive (reporting cases). This may be particularly useful during an outbreak and where syndromic case definitions can be used (the active identification of community cases of Ebola virus infection in Kikwit was an example of active community surveillance).

SURVEILLANCE, ENHANCED The collection of additional data about cases reported under routine surveillance. Routine surveillance is a starting point for more specific data collection on a given health event. This information may be sought from the reporter, the case, and the laboratory or from another surveillance data set.

SURVEILLANCE, HOSPITAL-BASED (Synonym: Hospital surveillance) Surveillance where the starting point for notification is the identification by a hospital of a patient with a particular disease or syndrome.

SURVEILLANCE, INTENSIFIED The upgrading from a passive to an active surveillance system for a specified reason and for a limited period (usually because of an outbreak). It must be noted that the system then becomes more sensitive; secular trends may therefore need to be interpreted carefully.

SURVEILLANCE, LABORATORY Surveillance where the starting point is the identification or isolation of a particular organism in a laboratory (e.g. surveillance of salmonellosis).

SURVEILLANCE, PASSIVE Surveillance where reports are awaited and no attempts are made to seek reports actively from the participants in the system.

SURVEILLANCE, ROUTINE The regular systematic collection of specified data in order to monitor a disease or health event.

SURVEILLANCE, SENTINEL Sentinel surveillance is surveillance based on the collection of data from a sample (random or non-random) of collecting sites as indicator data for the rest of the population, in order to identify cases of a disease early or to obtain indicative data about trends of a disease or health event. Examples are the use of a few hospitals to monitor the composition of influenza virus and check that the vaccine includes the right components, or the use of a network of general practitioners to monitor diseases or health events (e.g. attempted suicide, requests for HIV testing). One instance of sentinel surveillance is the use of a particular population group (e.g., monitoring the serology of syphilis or HIV infection among pregnant women as an indicator of trends in the general population). Sentinel surveillance is inappropriate for those situations where every case requires public health action, e.g., poliomyelitis.

In sentinel surveillance standard case definitions and protocols must be used to ensure validity of comparisons across time and sites despite lack of statistically valid sampling. Sentinel surveillance may include the use of animal sentinels to detect circulation of arboviruses.

SURVEILLANCE REPORT A regular publication with specific information on the disease under surveillance. It should contain updates of standard tables and graphs as well as information on outbreaks etc. In addition it may contain information on the performance of participants using agreed performance indicators.

SURVEY An investigation in which information is systematically collected. Usually carried out in a sample of a defined population group, within a defined time period. Unlike surveillance it is not ongoing; however, if repeated regularly, surveys can form the basis of a surveillance system.

SYNDROME A symptom complex in which the symptoms and/or signs coexist more frequently than would be expected by chance on the assumption of independence. *(Last JM, ed. A Dictionary of Epidemiology, 2001).*

SYNDROMIC REPORT The notification of a health event under surveillance for which the case definition is based on a syndrome not on a specified disease (e.g. acute haemorrhagic fever syndrome, acute respiratory syndrome).

ZERO REPORTING The reporting of "zero case" when no cases have been detected by the reporting unit. This allows the next level of the reporting system to be sure that the participant has not sent data that have been lost, or that the participant has not forgotten to report.

ANNEX 2.0

MISSION PLANNING CHECKLIST

Task	*Responsibility*
Ensure MoH commitment to the process	WHO Country Office
Get a clear briefing from WHO to all members of the team from WHO on the objectives of the mission	WHO Regional Office WHO HQ
Make sure the team leader is clearly identified	WHO Regional Office
Make sure the WR for the country is fully informed and involved	WHO Regional Office
Make sure the necessary invitations are sent	WHO Regional Office
Identify a focal point person within the Country Office	WHO Country Office
Find out about the country, the health services and the surveillance system(s)	WHO Country Office WHO Regional Office
Send background WHO assessment material to WRO and MoH	WHO HQ WHO Regional Office
Ensure that the MoH is well briefed / sensitised by the WR on the multi-disease approach to disease surveillance	WHO Country Office
Specify the profile that the assessment participants should fulfil	WHO Regional Office WHO HQ
Ensure senior representation on the national team	WHO Country Office MoH
Ensure representation from various levels of the system and from all major control programmes	WHO Country Office MoH
Identify a focal point person in the MoH for planning and carrying out the assessment	MoH
Prepare logistic arrangements for the mission	WHO Country Office MoH
Identify a venue for the workshop	WHO Country Office MoH
Organize access to computers, printers, photocopiers and secretarial services	WHO Country Office MoH
Arrange travel and accommodation arrangements as appropriate	WHO Country Office

ANNEX 2.1

LOGISTICS CHECKLIST

Arrival in country

- WR arranges reception at airport, visa provisions (if required)
- WR arranges hotel reservation
- WR arranges security clearance if necessary.

Personnel

- WR/MOH designates administrative and secretarial staff
- MoH makes administrative arrangements for participation of national staff.

Office facilities

- WR/MOH arranges office facilities including communication for the assessment team
- WR and MoH arrange for the workshop site and equipment.

Transport

Transport arranged by MoH and WR.

Other

ANNEX 2.2

MOH/WR PLANNING SPREADSHEET

Spreadsheet for the planning of surveillance assessment

Country	**Dates of assessment**			
Task	**Person Responsible** **Name/Unit**	**Expected date** **DD/MM/YY**	**Completed** **Y/N**	**Comments**
Discuss mission with MoH				
Obtain country clearance and invitation				
Identify external (WRO) and internal (MoH) focal point				
Obtain background material on country health services, surveillance system etc.				
Share background assessment material MoH				
Start logistic arrangements for the mission				
Meet with relevant donor and technical partners				

ANNEX 3.0

SETTING OF OBJECTIVES FOR ASSESSMENT AND TEAM ORGANIZATION

Activity:	Plenary session on the objectives of assessment and finalization of team organization
Objective:	To finalize the objectives of the assessment and the Organization of the assessment team
Method:	Group discussion
Duration:	1¾ hours
Materials required:	Prototype terms of reference and prototype team table for the organization of the team
Role of facilitator:	To ensure that the objectives of assessment are established, taking into account specific aspects of the system such as the system of communication, laboratory, GIS, and others that might require special attention
Product:	Agreed terms of reference and table showing Organization of assessment teams

Step I

The participants should agree on the objectives of the assessment, keeping in mind that the final report will relate closely to these terms of reference. The methods to be used should be agreed upon, as well as the anticipated outputs (for example, comprehensive documentation of the surveillance system, action plan etc.). The various institutions taking part in the surveillance assessment should be identified.

Step II

The professional role of each team member from participating institutions should be stated, in order to allocate tasks rationally and fairly. The team will take an active part in all aspects of evaluation, and liaise with the various units and organization involved, including following-up assessment after the mission. (See Annex 3.2)

Step III

The relevant details should be filled, using the templates provided or an adapted version thereof (Annex 3.1: Prototype Terms of Reference for Assessment and Annex 3.2: List of Participants in Assessment Team).

Work plan

Step	Specific task	Person responsible	Duration	Resources	Output
Step I	Define objectives and outputs of evaluation	Team-members	45 minutes	Background materials on assessment mission	Record of objectives and expected outputs
Step II	Elaborate terms of reference	Team-members/ facilitator	30 minutes	Draft ToR	Record of elaborated Terms of Reference
Step III	Attribute groups and functions to team members	Team-members/ facilitator	30 minutes	List of team members and professional roles	Table showing the organization of the assessment team

ANNEX 3.1

PROTOTYPE TERMS OF REFERENCE FOR ASSESSMENT

The Ministry of Health of [COUNTRY] invites the World Health Organization to facilitate the assessment of the national communicable disease surveillance, epidemic preparedness and response with the following objectives:

- To assess the structure, process, capacity, resources, effectiveness and co-ordination of the national surveillance system for communicable diseases, epidemic preparedness and response; and
- To propose a plan of action to strengthen communicable disease surveillance, epidemic preparedness and response.

The assessment will take the form of a facilitated workshop to examine the current system and adapt the generic tool, followed by training of interviewers and by pre-testing. The field assessment will be conducted in sites selected from all levels of the health system. After the field assessment, all relevant findings will be summarised in a report that will identify the strengths and weaknesses of the current system. This report will be presented at a final workshop at which a draft plan of action will be drawn, including agreement on activities, time-tables and budgets.

The assessment team will be led jointly by [NAME] from the Ministry of Health and [NAME] nominated by the World Health Organization. The team itself will consist of Ministry of Health staff from all major control programmes and from the epidemiology unit in the ministry, and WHO staff.

ANNEX 3.2

LIST OF PARTICIPANTS IN ASSESSMENT TEAM

Surveillance assessment team

Name	Position	Unit/Organization	Responsibility in assessment	Phone/Fax	e-mail
Dr. A. Diallo	Head of Epidemiology Unit	Ministry of Health	National Team Leader	00 256 77 23 23 /idem	None

ANNEX 4.0

PRIORITY SETTING EXERCISE

Objective:	To categorise relevant communicable diseases according to their public health priority
Method:	Small group discussion (8-10 persons per group)
Duration:	Approximately 2 hours
Materials required:	Background information on communicable diseases in the country
Role of facilitator:	To help the group complete a template table through examination of background material and small group discussion
Product:	Table of priority communicable diseases with justification

Step I

The facilitator should get the group to make a list of criteria to prioritise diseases (high mortality, high morbidity, high case fatality rate, for elimination or eradication, control is feasible, the cost involved, epidemic potential, existing control programmes, national, regional and global targets, etc.) and a list of diseases that should be under surveillance.

Step II

The facilitator should obtain a list of diseases under surveillance in the country.

Step III

These lists should be compared to achieve consensus on what should be under surveillance. Where is there is no consensus, the facilitator should assist in a process of prioritisation.

ANNEX 5.0

INVENTORY OF CURRENT SURVEILLANCE ACTIVITIES

Using the consensus list of priority diseases, the group should examine the strategies used in the surveillance of these diseases and identify gaps in surveillance if any.

Objective:	To make an inventory of current surveillance activities for the diseases on the consensus list and identify gaps
Method:	Small group discussion
Duration:	Approximately 2 hours
Materials required:	Consensus list of diseases from previous exercise and information on current surveillance activities in the country
Role of facilitator:	To help the group complete a template table by examination of background material

Step I

The facilitator should assist the group in identifying gaps in the existing surveillance system. For each disease questions should be asked about how surveillance is conducted: (see Annex 5.1)

Step II

Participants should produce a consensual document on the model of Annex 5.1

Step	Specific task	Person responsible	Duration	Resources	Output
Step I	Inventory of surveillance activities	Team-members	1 hour	Background on surveillance systems	List of existing surveillance activities and diseases under surveillance
Step II	Identification of gaps in the surveillance of the priority diseases identified	Team-members/ facilitator	1 hour	Template table	Table illustrating gaps in surveillance

ANNEX 5.1

DESCRIPTION OF MAJOR SURVEILLANCE ACTIVITIES TO IDENTIFY GAPS

Priority Disease	Existing surveil-lance activities	Programme(s) managing surveillance activities	Levels at which surveillance activities are carried out	Types of Surveillance				Case Definition	Confirmation (Clinical/lab or both)	Identified gaps
				Collection strategy	Type of data collected	Frequency of collection	Method of collection			
Cholera	Y	1. Epidemiological surveillance unit 2. CDD	All (Central, District, Health Facility)	Routine	Case-based Aggregated	Immediately Weekly	Active Passive	Y	Both	
VHF	N	None	None	Survey	Case-based	Immediately	Active	N	Lab	
HIV	Y	HIV	All	Sentinel	Case-based	Annually	Passive	Y	Lab	
Malaria	Y	Epidemiological surveillance unit	All	Routine Surveys	Aggregated Case-based Case-based	Monthly Annually 2-5 years	Passive Passive Passive	Y	Both	

ANNEX 6.0

SURVEILLANCE SYSTEM(S), FLOW CHART(S) AND TASK DESCRIPTION

Using the consensus list of priority diseases the group should study the design of the surveillance systems and the process by which data and samples move through the system. The group should also identify those units responsible for response and feedback.

Objective:	To draw a flow chart showing design of surveillance system and task description by level
Method:	Group discussion
Duration:	Approximately 3 hours
Materials required:	Products from previous session and any documentation of current systems
Role of facilitator:	To help the group to produce the flow chart by examining the background material and through group discussion
Product:	Annotated flow chart(s)

Work plan

Step	Specific task	Person responsible	Duration	Resources	Output
Step I	Identify surveillance activities at each level for each programme/ priority disease	Participants	1 hour	Background documents, workshop outputs Flow diagram template	Flow diagram of surveillance structure and process
Step II	Analyse tasks at each level for priority diseases	Participants/ facilitator	1 hour	Task analysis template	Table of analysed tasks for each priority disease

Step	Specific task	Person responsible	Duration	Resources	Output
Step III	Identify constraints to surveillance at each level and propose realistic solutions	Participants	1 hour	Table of analysed tasks	Table of constraints to surveillance at each level and proposed solutions

ANNEX 7.0

TASK ANALYSIS BY LEVEL FOR PRIORITY DISEASES

(MAY BE PERFORMED AFTER THE ASSESSMENT)

Task/Activity **Proposed task, by level**	**Person responsible**	**Timing**	**Skill**	**Resources**	**Support function required**
Peripheral Level					
Detection	Health worker	Per occurrence of health event	Basic diagnostic skills	Written case definitions Register Surveillance forms	Standards Training Supervision
Reporting					
Analysis...					
Intermediate Level					
Detection/ Confirmation					
Reporting					
Analysis…					
Central Level					

ANNEX 8.0

DESIGNING TOOLS FOR FIELD ASSESSMENT

Objective:	To adapt the generic field assessment tools
Method:	Group discussion
Duration:	Approximately 8 hours
Materials required:	List of priority diseases identified and surveillance flow chart
Role of facilitator:	To help the group adapt the generic field assessment questionnaires through group discussions. The facilitator needs to stress the importance of making the generic questions relevant to the country, the need for emphases on pertinent questions, discarding irrelevant ones, regrouping questions, splitting others, and creating new questions if necessary. Although more difficult to analyse, the importance of probing and collecting qualitative data should be stressed.
Product:	Table of performance indicators for surveillance system(s) for the country's priority diseases, field assessment questionnaires for each level (central, district or intermediate, health facility) and laboratory.

Step I:

Discuss generic performance indicators and examples with group, then adapt or modify them for the country's priority diseases (through group discussion). Take into account the objectives of surveillance and various components of surveillance that might affect the performance of a system (e.g. available standards, skills, material resources, communication technology).

Step II:

Jointly reflect on the various aspects of the surveillance system that need to be assessed at each level (mainly, structure, capacity and synergy within the system, and between systems). Adapt the generic questionnaires (see Annex 12) for field assessment at each level. The questionnaires should be a product of indicators chosen.

Step	Specific task	Person responsible	Duration	Resources	Output
Step I	Create/identify indicators to assess system performance for each level for each disease	Facilitators/ participants	3 hours	List of priority diseases identified, objective of surveillance	List of indicators to establish the system(s) performance for the priority diseases
Step II	Develop/adapt questionnaires for data collection for indicators at each level	Facilitators/ participants	5 hours	Generic questionnaires	Questionnaires for field assessment at each level

ANNEX 9.0

SELECTION OF ASSESSMENT SITES AND SCHEDULING OF VISITS

Objective:	To select assessment sites, schedule visits and work out logistics
Method:	Group discussion
Duration:	Approximately 2 hours
Materials required:	List of facilities, and maps, template tables
Role of facilitator:	To help the group select assessment sites using acceptable sampling method (see Annex 9.1 for sampling)
	To help the group agree on field visit scheduling and logistics
Products:	Sample sizes for the assessment
	Schedule of field visits and logistic arrangements

Work Plan

Step	Specific task	Person responsible	Duration	Resources	Output
Step I	Selection types of sites and number of facilities to be visited	Participants	60 minutes	List of facilities, maps	Sample sizes (by level) Table indicating types and number of sites and facilities to be visited, with indication of any exclusions made
Step II	Scheduling field visits	Participants/ facilitator	30 minutes	Table indicating sites and facilities	Schedule of field visits for team members
Step III	Arrangement of logistics for field visits	Participants/ facilitator	30 minutes	Template table indicating schedules for field visit	Table of equipment, transport, accommodation, security and per-diem arrangements for team members

ANNEX 9.1

SELECTION OF SAMPLES FOR REGIONS, DISTRICTS, AND HEALTH FACILITIES

The general sampling strategy is to collect information about all levels of the surveillance system; the national, district, health facility levels, including the laboratory. This provides an overall picture of surveillance and response within the health care system.

It may be too expensive and time consuming to use a sample that would enable precise quantitative statements about each characteristic of the surveillance system addressed in the assessment and there may be little added value. Such a sample is not necessarily required, since the purpose of the assessment is to **understand** how the surveillance system is working, in order to address **common problems and challenges, identify synergies and strengthen the system**, rather than to have a scientific statement about the extent of each of the problems. It is particularly important that the sample includes districts representing the broad range of surveillance practices within the country.

One approach to sampling would be to divide the country into a number of strata corresponding to major geographical or administrative areas. Usually administrative regions or provinces have been used.

At the regional or provincial level, each region or province can be further stratified into sub-strata according to important characteristics that affect the functioning of the surveillance system. For example, it might be advantageous to divide the province into areas that appear to have particularly well functioning surveillance systems, those thought to have average systems, and those where it is believed that surveillance is functioning poorly. In addition, if there are areas with particular epidemiological characteristics — such as those prone to certain types of epidemics, where early warning is essential — it might be advisable to include those as separate sub-strata within the region. Districts could be selected randomly within each sub-stratum.

The selection of health facilities requires a detailed list of health facilities, including the level of facility (hospital, health centre or health post) whether they are situated in urban or rural areas, and whether they are public or private. Facilities should then be randomly selected from both rural and urban areas, publicly or privately owned, and representing each type of health facility (hospital, health centre, and health post, dispensaries). Thus, if the district contains rural and urban areas, and public and private health facilities, then health facilities should be selected representing public as well as private facilities in both rural and urban areas.

It is important to keep in mind that the selection of regions or provinces takes place at the national level, while the selection of sample districts takes place at the regional level, and the selection of sample facilities takes place at the district level. There are two reasons for structuring the sampling process in this way. First, one of the main aims of the assessment is to involve all layers of the surveillance system in the process. By selecting the districts and health facilities at the regional and district levels respectively, managers at these levels will feel more involved in the process as a whole. In addition, it is not always the case that the relevant, up-to-date detailed information on districts and their health facilities will be available at the national level.

Sometimes, because of logistic reasons, it will not be possible to visit all parts of the country either because of the remoteness of the area, or because of other reasons that would make visiting the area impossible. These constraints should be identified before the sampling takes place, and the fact that the certain areas were excluded from the sample will need to be taken into consideration in the analysis of the data. If for example, it were not possible to visit any remote areas, this would mean that the sample did not reflect the situation in remote areas, and no conclusions can be drawn about them.

In analyzing the information, it must be remembered that this assessment is not a scientific sample, so that although the data can be summarized, levels of statistical significance cannot be assigned. The analysis should serve to identify common problems in the surveillance system, and suggest areas of the country in which such problems are common.

ANNEX 9.2

SCHEDULE AND LOGISTICS

Date	Site	Facility	Team	Duration	Transport	Equipment	Accommo-dation	Security	Per-diem

ANNEX 9.3

CONDUCT DURING FIELD ASSESSMENT

Guide to field communication at different levels

Team Members

1. Introduce team members to each other. This is important to enhance team spirit
2. Identify where, when and how long the assessment will take at each site
3. Explicitly discuss the roles and responsibilities of each team member, which may change from site to site
4. Ensure that the group members have logistics and supply, including data collection tools, stationary, daily allowances, etc.
5. Make sure that there is communication with the overall team leader regularly (daily at the least, recommended)
6. Communicate with the overall co-ordinator before making changes in the tools, field methods or the location. There may be a need to change these. However, changes must be discussed and agreed upon for consistent data collection.

Meeting with authorities-focal persons at field

1. Identify the focal person at the assessment region, zone, facility
2. Plan consultation sessions ahead of time and get it scheduled
3. Introduce team members and brief on mission objectives
4. Outline what your expectations from this briefing meeting are
5. Emphasise that the assessment is for strengthening and making recommendations to facilitate work, and not for critical, judgemental or punitive purposes

6. Invite the focal person to provide views and inputs
7. Agree on roles and accept support from the organizations and institutions supporting surveillance at the field level
8. Explain how you will get feedback of the assessment to them, and any planned follow-up to the mission.

Meeting health workers carrying out surveillance

1. Give clear description of objectives of the mission
2. Discuss their roles in the assessment (Do they participate and give interviews at lower level? Do they need to be interviewed, have data collected from them, observed executing their practice, etc.)
3. Explain whether you will provide feedback, and if so how it would reach them.

Accessing Communities

1. Observe and respect community norms
2. Clearly explain the objectives in a simple and concise way. Answer their questions
3. Often the mission may raise expectations. Be honest about your mission
4. Select convenient time to conduct community assessments.

ANNEX 10.0

ANALYSIS, PRELIMINARY REPORT WRITING

Objective:	To analyse data from field visits and prepare draft report
Method:	Group discussion
Duration:	Approximately 3 days
Materials required:	Products of pre-assessment workshop; questionnaires from the field assessment; data entry and data management skills
Role of facilitator:	To help the groups analyse the data obtained from the field assessment, both qualitative (impressions obtained in the field) and quantitative (questionnaires) and help them draft a preliminary report of the findings
Products:	Preliminary report of the assessment findings, which will be left in the country assessed
	Draft timetable for writing the final assessment report, for circulation to stakeholders and partners of MoH
	Draft timetable for Plan of Action Workshop

The preliminary report (see Annex 15 for reporting format) and the draft timetables for writing the final report and the Plan of Action Workshop should be presented at the Post Assessment Workshop.

Before leaving the country it is important to:

- Agree on the schedule for follow-up
- Agree on the exact dates for the Plan of Action Workshop
- Arrange for WHO liaison to carry out day to day follow-up with MoH focal point regarding the preparation and circulation of the final assessment report
- Organize regular updates on progress and involve technical and donor partners within the country
- WHO should be informed about any major obstacles encountered.

ANNEX 10.1

PROTOTYPE REPORT WRITING FORMAT

Executive Summary

1. Introduction

2. Background on the country

2.1 Geography
2.2 Demography
2.3 Socio-economic factors
2.4 Health systems
2.4.1 Health services infrastructure
2.4.2 Human resources for health
2.4.3 Health status (description, indicators)
2.4.4 The burden of disease (mortality, morbidity, infectious diseases)
2.4.5 Decentralization (if relevant)
2.4.6 The health sector strategic plan if relevant
2.4.7 Review of existing surveillance systems (include flow chart, organogramme)
2.4.8 Brief description of existing components of systems assessed
2.4.8.1 Priority diseases
2.4.8.2 Structure
2.4.8.3 Process/Capacity
2.4.8.4 Out put
2.4.8.5 Integration
2.4.8.6 Laboratories
2.4.8.7 GIS
2.4.8.8 Communication

3. Objectives of assessment

3.1 General objective

3.1 Specific objectives

4. Methodology

4.1 Preparation for the assessment

4.2 Selection of sites

4.2.1 Selection of regions/provinces

4.2.2 Selection of districts.

4.2.3 Selection of health facilities

4.3 Procedure and data collection tools

4.4 Composition of assessment teams

4.5 Training of assessment teams

4.6 Field testing

4.7 Field assessment

4.8 Data analysis

4.8.1 Quantitative analysis

4.8.2 Qualitative analysis

5. Findings: For each level

5.1.1 Presence of surveillance systems

5.1.2 Availability of case definition (health facility)

5.1.3 Case confirmation (health facility)

5.1.4 Data reporting (completeness and timeliness)

5.1.5 Data analysis

5.1.6 Outbreak investigation

5.1.7 Epidemic preparedness

5.1.8 Epidemic response

5.1.9 Feedback

5.1.10 Supervision

5.1.11 Co-ordination

5.1.12 Training

5.1.13 Resources

5.1.14 The laboratory

5.1.15 GIS

5.1.16 Communications

6. Conclusion

7. Recommendations

8. Annexes

Example: Annex 1. Qualitative analysis (strengths, weaknesses, opportunities, threats, solutions/recommendations)

8.1 Existence of the surveillance systems
8.2 Case detection
8.3 Case registration
8.4 Case confirmation
8.5 Reporting
8.6 Feedback from higher levels
8.7 Data analysis
8.8 Epidemic preparedness and response
8.9 Training
8.10 Supervision
8.11 Surveillance co-ordination
8.12 Resources
8.13 Conclusions and recommendations

ANNEX 11.0

POA MATRIX

Building on the findings and recommendations from the assessment

	Goals	Objectives	Activities	Timeline	Imple-menters	Resources	Obstacles	Indicators
Case detection								
Registration								
Confirmation								
Reporting								
Analysis								
Response								
Epidemic preparedness								
Communi-cation								
Training								
Supervision								
Feedback								
Laboratory								
Integration								

ANNEX 12.0

GENERIC QUESTIONNAIRES

These generic questionnaires need to be adapted at country level to make them relevant to specific country needs.

These questionnaires comprise sets of indicators and questions. Indicators are preceded by "I" and are in bold. Questions have suggested variable names e.g. C1.1.

CENTRAL LEVEL QUESTIONNAIRE

Identifiers

Assessment team: ID1	Respondent: ID3
Date: DATE	Country: ID8
Interviewer: ID2	Surveillance System : ID9

O. General

I. Availability of legal mechanism to enforce surveillance

C0.1 Is there mandatory surveillance for any diseases? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C0.1T List diseases, ***if yes***:

I. Availability of a national surveillance manual

C0.2 Is there a national manual for surveillance? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C0.2T ***If yes***, describe (last update, diseases included, case definitions, surveillance and control, integrated or different for each disease):

I. Case detection and registration

I. Existence of standardised case definitions for the country's priority diseases

C1.1 Do you have standard case definitions for the country's priority diseases? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C1. 2Obs [1 to n priority diseases] Observed the standard case definition for (each priority disease) Yes ☐ No ☐ Unknown ☐ Not applicable ☐

II. Data reporting

I. Presence of recommended reporting forms in the country at all times over the past 6 months

C2.1 Is the central level responsible for providing surveillance forms to the health facilities? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C2.2 ***If yes***, have you lacked appropriate surveillance forms at any time during the last 6 months? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of district reports (either directly or through an intermediate level) received each reporting period at the central level during the past 3 months:

Number of reports in the last 3 months compared to expected number

C2.31N	Weekly:	/12 times the number of districts
C2.32N	Monthly:	/3 times the number of districts

I. On time (use national deadlines)

C2.41N	Number of weekly reports received on time:	/12 times the number of districts
C2.42N	Number of monthly reports received on time:	/3 times the number of districts

I. Reporting to WHO

C2.5Obs Does the Ministry of Health share surveillance data with the WHO?

[Observe reports at WR's Office]

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Capacity to report to next level by e-mail, telephone, fax or radio

C2.6 How do you report:

Mail ☐ Fax ☐ Telephone ☐ Radio ☐ Electronic ☐ Other ☐

III. Data analysis

I. Does the central level:

Describe data by person (case based, outbreaks, sentinel)?

C3.1Obs Observed description of data by age and sex

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Describe data by place?

C3.2Obs Observed description of data by district (tables, maps)

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Describe data by time?

C3.3Obs Observed description of data by time

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Perform trend analysis?

C3.4Obs Observed line graph of cases by time

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C3.4T List disease(s) for which line graph is observed

I. Have an action threshold defined for each priority disease?

C3.5 Do you have an action threshold defined for any of the country priority diseases?

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C3.6	Do you have an action threshold for any diseases targeted for eradication or elimination?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
C3.7	***If yes,*** what is it? (Ask for two priority diseases)	cases ☐ % increase ☐ rate ☐
C3.71N	Eradication	
C3.72N	Epidemic prone	

I. Have appropriate denominators?

C3.8Obs	Observed presence of demographic data (E.g. population by district and hard to reach groups)	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Use appropriate denominators?

C3.9Obs	Observed rates derived from demographic data	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Use appropriate source of denominators?

C3.10T What is the source of your denominator?

IV. Outbreak investigation

I. Percent of suspected outbreaks that were investigated in the past 1 year

C4.11N Number of outbreaks suspected in the past year

C4.12T List the diseases

C4.13N Of those, number investigated

(Observe reports and take copies if possible)

I. Of the investigated outbreaks in the past 1 year, percent in which risk factors were looked for

C4.2N Number of outbreaks in which risk factors were looked for

I. Of the investigated outbreaks in the past 1 year, percent in which findings were used for action

C4.3N Number of outbreaks in which findings were used for action

[Observe report]

V. Epidemic preparedness (relevant for epidemic prone diseases)

I. Existence of a national plan for epidemic preparedness and response

C5.1Obs	Observed a written plan of epidemic preparedness and response	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Existence of emergency stocks of drugs, vaccines, and supplies at all times in past 1 year

C5.2	Has the country had emergency stocks of drugs, vaccines, and supplies at all times in past 1 year?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C5.2Obs	Observed the adequacy of stocks of drugs, vaccines and supplies at time of assessment	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Experience of a shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)

C5.3	Has the country experienced shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Existence of a standard case management protocol for epidemic prone diseases

C5.4Obs Observed the existence of a written case management protocol for at least 1 priority disease

C5.4T ***If yes***, list:

I. Presence of a budget line for epidemic response

C5.5	Is there a budget line for epidemic response?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Existence of a central epidemic management committee

C5.6	Observed minutes (or report) of meetings of epidemic management committee	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Existence of a central rapid response team for epidemics

C5.7	Does the country have a rapid response team for epidemic?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VI. Response to epidemics

I. Ability of the central level to respond within 48 hours of notification of most recently reported outbreak

C6.1Obs	Observed that the central level responded within 48 hours of notification of most recently reported outbreak (from written reports with trend and intervention)	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Ability of the central level to monitor mass vaccination (meningitis and yellow fever) campaign coverage evaluations

C6.2Obs	Does the central level monitor mass vaccination campaign coverage evaluations (Observe report to confirm check for coverage by age group, logistics and costing)?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Ability of the national epidemic management committee to evaluate its preparedness and response activities

C6.3Obs	Has epidemic management committee evaluated its preparedness and response activities during the past year (Observe written report to confirm)?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VII. Feedback

I. Existence of capacity for publication of health and surveillance information

Is there at the MoH for publications

C7.0	An editorial board?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
C7.1	An editor?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
C7.2	An annual budget?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Existence of a report or bulletin that is regularly produced to disseminate surveillance data

C7.3N	How many feedback bulletin or reports has the central level produced in the last year?	
C7.3Obs	Observed the presence of a report or bulletin that is regularly produced to disseminate surveillance data	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VIII. Supervision

I. Percent of supervisors that made the required number of supervisory visits in the past 6 months

C8.1N	How many supervisory visits have you made in the last 6 months?
C8.2N	Obtained required number of visits from central level

The most usual reasons for not making all required supervisory visits. (Text)

C8.3T

C8.4T

C8.5T

IX. Training

I. Percent of health personnel trained in disease surveillance

C9.1N	What percent of your subordinate personnel have been trained in surveillance	
C9.2	Have you been trained in disease surveillance?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
C9.2T	***If yes,*** specify when, where, how long, by whom?	

I. Percent of health personnel that have received post-basic training in disease surveillance

C9.3	Have you received any post-basic training in disease surveillance?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
C9.3T	***If yes,*** specify when, where, how long, by whom?	

I. Percent of health personnel that have received post-basic training in epidemic management

C9.4 Have you received any post-basic training in epidemic management? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C9.4T ***If yes,*** specify when, where, how long, by whom?

Obtain and analyse the content of the surveillance and epidemic management training

C9.5T Strengths

C9.6T Weaknesses

C9.7T Opportunities

C9.8T Threats

I. Major strength and weaknesses of existing training schools and programmes' materials

C9.9T Strengths

C9.10T Weaknesses

C9.11T Opportunities

C9.12T Threats

I. Presence of a functional Epidemiology/Public Health Society

C9.13 Is there a national Epidemiology/Public Health Society? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C9.13N How often do they meet?

X. Resources

I. Percent of sites that have:

Data management

— Computer
— Printer
— Photocopier
— Data manager
— Statistical package

Communications

— Telephone service
— Fax
— Radio call
— Satellite phone
— Computers that have modems

Budget line

Logistics

Data management	**(Yes = Y No = N Unknown = U Not applicable = N/A)**		**Number if available**
— Computer	**C10.1**	Y ☐ N ☐ U ☐ N/A ☐	**C10.1N**
— Printer	**C10.2**	Y ☐ N ☐ U ☐ N/A ☐	**C10.2N**
— Statistical package	**C10.3**	Y ☐ N ☐ U ☐ N/A ☐	
— Data manager	**C10.4**	Y ☐ N ☐ U ☐ N/A ☐	**C10.4N**
— Photocopier	**C10.5**	Y ☐ N ☐ U ☐ N/A ☐	**C10.5N**
Communications			
— Telephone service	**C10.6**	Y ☐ N ☐ U ☐ N/A ☐	
— Fax	**C10.7**	Y ☐ N ☐ U ☐ N/A ☐	
— Radio call	**C10.8**	Y ☐ N ☐ U ☐ N/A ☐	
— Computers that have modems	**C10.9**	Y ☐ N ☐ U ☐ N/A ☐	**C10.9N**
Logistics			

XI. Surveillance

I. Have a functional computerised surveillance network

C10.10 Do you have a computerised surveillance network at this level? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C10.10T ***If yes***, Describe (closed network, central database server, data storage and analysis, feedback through system etc)

C10.11T Links with other levels (list)

C10.12T Link to specialised computerised systems (ex. Outbreak notification system). List:

I. Budget for surveillance

C10.13 Is there a budget line for surveillance in the MoH budget? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C10.13N ***If yes***, what is the proportion: %

I. Opportunities for strengthening surveillance

C11T How could surveillance be improved?

XII. Surveillance co-ordination

I. Existence of a surveillance co-ordination body at MOH central level

C12.1 Is there a surveillance co-ordination body at MOH central level? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

C12.1T ***If yes***, describe its composition, function and links to various sectors including the laboratory

[Observe minutes/reports of the co-ordination committee to confirm]

I. Existence of focal unit for surveillance at MOH central level

C12.2Obs Is there a focal unit for surveillance at the MOH central level?
[Observe organogramme of MoH to confirm]

Yes ☐ No ☐
Unknown ☐
Not applicable ☐

I. Opportunities for integration

C13T What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.)?

DISTRICT (INTERMEDIATE LEVEL) QUESTIONNAIRE

The questions are preceded by suggested variable names e.g., D1.1.

Identifiers

Assessment team: ID1	District: ID6
Date: DATE	Region/Province: ID7
Interviewer: ID2	Country: ID8
Respondent: ID3	Surveillance System : ID9

I. Percent of districts with available national surveillance manual

D0.1 Is there a national manual for surveillance at this site?

D0.1Obs Observe national surveillance manual

I. Case confirmation

I. Percent of districts that have the capacity to transport specimens to a higher level lab

D1.1 Does the district have the capacity to transport specimens to a higher level lab? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of districts with guideline for specimen collection, handling and transportation to next level

D1.2 Does the district have guidelines for specimen collection, handling and transportation to the next level? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

II. Data reporting

I. Percent of sites that have forms recommended for the country for that site at all times over the past 6 months

D2.1 Have you lacked forms recommended for the country at any time during the last 6 months? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of health facilities that reported each reporting period to the district level during the past 3 months

Number of reports received in the last 3 months compared to expected number

D2.21 Weekly: /12 times the number of health facilities

D2.22 Monthly: /3 times the number of health facilities

I. On time (use national deadlines)

D2.31	Number of weekly reports submitted on time:	/12 times the number of health facilities
D2.32	Number of monthly reports submitted on time:	/3 times the number of health facilities

I. Percent of districts that reported each reporting period to the next higher level during the past 3 months

Number of reports in the last 3 months compared to expected number

D2.41	Weekly:	/12 times the number of health facilities
D2.42	Monthly:	/3 times the number of health facilities

I. On time (use national deadlines)

D2.51	Number of weekly reports submitted on time:	/12 times the number of health facilities
D2.52	Number of monthly reports submitted on time:	/3 times the number of health facilities

I. Percent of districts that have means for reporting to next level by e-mail, telephone, fax or radio

D2.6 How do you report:

Mail ☐ Fax ☐ Telephone ☐ Radio ☐ Electronic ☐ Other ☐

I. Strengthening reporting

How can reporting be improved?

D2.7T

III. Data analysis

I. Percent of sites that:

Describe data by person (case based, outbreaks, sentinel)

D3.1Obs Observed description of data by age and sex — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Describe data by place

D3.2Obs Observed description of data by place (locality, village, work site etc) — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Describe data by time

D3.3Obs Observed description of data by time — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Perform trend analysis

D3.4Obs Observed line graph of cases by time — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

D3.4T List:

I. Have an action threshold for each priority disease

D3.41 Do you have an action threshold for any of the country priority diseases? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

D3.42 ***If yes,*** what is it? cases ☐ % increase ☐ rate ☐
(Ask for 2 priority diseases)

D3.51N Eradication

D3.52N Epidemic prone

I. Have appropriate denominators

D3.6Obs Observed presence of demographic data at site (E.g. population <5 yr, population by village, total population) Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Use appropriate source of denominators

D3.7T What is the source of your denominator?

I. Percent of sites that compare current with previous incidence for early detection of epidemics

D3.8Obs Observed visible line graph of cases by time for epidemic prone diseases Yes ☐ No ☐ Unknown ☐ Not applicable ☐

D3.8T List:

IV. Outbreak investigation

I. Percent of suspected outbreaks that were investigated in the past year

D4.1N Number of outbreaks suspected in the past year

D4.1Obs Of those, number investigated
(Observe reports and take copies if possible)

I. Percent of districts that have ever conducted an outbreak investigation

[Number of districts assessed that have ever conducted an outbreak investigation
Number of districts assessed to obtain indicator]

D4.2 Has your district ever investigated an outbreak? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Of districts that investigated an outbreak, percent that looked for risk factors

D4.3N Number of districts that looked for risk factors [observe in reports]

I. Of districts that investigated an outbreak, percent that used the data for action (action include containing outbreak, improving surveillance, community actions)

D4.4N Number of districts that used the data for action [observe in final report]

V. Epidemic preparedness

I. Percent of districts that have a plan for epidemic preparedness and response

D5.1Obs Observed a written plan of epidemic preparedness and response

I. Percent of districts that have emergency stocks of drugs and supplies at all times in past 1 year

D5.2 Has the district had emergency stocks of drugs and supplies at all times in past 1 year?

D5.2Obs Observed the stocks of drugs and supplies at time of assessment — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

List what is available:

I. Percent of districts that experienced a shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)

D5.3 Has the district experienced shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)? — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Presence of a budget line for epidemic response or access to funds for epidemic response

D5.4 Is there a budget line or access to funds for epidemic response? — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of districts that have an epidemic management committee

D5.5Obs Observed minutes (or report) of meetings of epidemic management committee — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of districts that have rapid response team for epidemics

D5.6 Does the district have a rapid response team for epidemics? — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VI. Responses

I. Percent of sites that implemented prevention and control measures based on local data for at least one reportable disease or syndrome

D6.1 Has the district implemented prevention and control measures based on local data for at least one reportable disease or syndrome? — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of districts that responded within 48 hours of notification of most recently reported outbreak

D6.2Obs Observed that the district responded within 48 hours of notification of most recently reported outbreak (from written reports) — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of districts that achieved acceptable case fatality rates (e.g. 10% for Meningococcal CSM 1% for Cholera) during the most recent outbreak

D6.3Obs Observed that the district achieved an acceptable case fatality rate for most recent outbreak

(Observe from outbreak report) — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I.	**Percent of districts that have performed mass vaccination (meningitis and yellow fever) campaign coverage evaluations**	
D6.41	Has the district ever performed mass vaccination campaigns?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
D6.42Obs	***If yes***, has the district ever calculated vaccination coverage? (observe report to confirm)	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
I.	**Percent of epidemic management committees that have evaluated their preparedness and response activities during the past year**	
D6.5Obs	Has epidemic management committee evaluated their preparedness and response activities during the past year? (observe written report to confirm)	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VII. Feedback

I.	**Percent of sites that have written report that is regularly produced to disseminate surveillance data**	
D7.1N	How many feedback written reports has the district produced in the last year?	
D7.1Obs	Observed the presence of a written report that is regularly produced to disseminate surveillance data (district and higher)	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
I.	**Percent of sites that have received a report or bulletin from a higher level during the past year on the data they have provided**	
D7.2N	How many feedback bulletin or reports has the district received in the last year?	
D7.2Obs	Observed at least 1 report or bulletin at district from a higher level during the past year on the data they have provided	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VIII. Supervision

I.	**Percent of individuals supervised in the past 6 months**
D8.1N	How many times have you been supervised in the last 6 months?
D8.1Obs	Observed supervision report or any evidence of supervision in last 6 months
I.	**Of those supervised in the previous 6 months, percent of individuals for which the supervisor from the next higher level reviewed surveillance practices appropriate to their level**
D8.2Obs	Observed supervision report or any evidence for appropriate review of surveillance practices
I.	**Percent of supervisors that made the required number of supervisory visits in the past 6 months**
D8.31N	How many supervisory visits have you made in the last 6 months?
D8.32N	(Obtain required number of visits from central level)

The most usual reasons for not making all required supervisory visits. (Text)

D8.41T Reason 1

D8.42T Reason 2

D8.53T Reason 3

IX. Training

I. Percent of health personnel (in position of responsibility) trained in disease surveillance

D9.1 Have you been trained in disease surveillance? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

D9.1T ***If yes,*** specify when, where, how long, by whom?

I. Proportion of districts with staff trained in surveillance and epidemic management

D9.2 What percent of your personnel in the district have been trained in surveillance and epidemic management

D9.2N

I. Percent of health personnel (in position of responsibility) that have received post-basic training in disease surveillance

D9.3 Have you received any post-basic training in disease surveillance? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

D9.3T ***If yes,*** specify when, where, how long, by whom?

I. Percent of health personnel that have received post-basic training in epidemic management

D9.4 Have you received any post-basic training in epidemic management? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

D9.4T ***If yes,*** specify when, where, how long, by whom?

X. Resources

I. Percent of sites that have:

Logistics

- Electricity
- Bicycles
- Motor cycles
- Vehicles

Data management

- Stationery
- Calculator
- Computer
- Printer
- Statistical package

Communication			
— Telephone service			
— Fax			
— CB radio			
— Computers that have modems			
Information education and communication materials			
— Posters			
— Megaphone			
— Flipcharts or Image box			
— VCR and TV set			
— Generator			
— Screen			
— Projector (Movie)			
— Other:			
Hygiene and sanitation materials			
— Spray pump			
— Disinfectant			
Protection materials (list)			
Logistics	**(Yes = Y No = N Unknown = U Not applicable = N/A)**		**Number if applicable**
— Electricity	**D10.1**	Y ☐ N ☐ U ☐ N/A ☐	
— Bicycles	**D10.2**	Y ☐ N ☐ U ☐ N/A ☐	**D10.2N**
— Motor cycles	**D10.3**	Y ☐ N ☐ U ☐ N/A ☐	**D10.3N**
— Vehicles	**D10.4**		**D10.4N**
Data management			
— Stationery	**D10.5**	Y ☐ N ☐ U ☐ N/A ☐	
— Calculator	**D10.6**	Y ☐ N ☐ U ☐ N/A ☐	**D10.6N**
— Computer	**D10.7**	Y ☐ N ☐ U ☐ N/A ☐	**D10.7N**
— Printer	**D10.8**	Y ☐ N ☐ U ☐ N/A ☐	**D10.8N**
— Statistical package	**D10.9**	Y ☐ N ☐ U ☐ N/A ☐	
Communications			
— Telephone service	**D10.10**	Y ☐ N ☐ U ☐ N/A ☐	
— Fax	**D10.11**	Y ☐ N ☐ U ☐ N/A ☐	
— Radio call	**D10.12**	Y ☐ N ☐ U ☐ N/A ☐	
— Computers that have modems	**D10.13**	Y ☐ N ☐ U ☐ N/A ☐	**D10.13N**
Information education and communication materials			
— Posters	**D10.14**	Y ☐ N ☐ U ☐ N/A ☐	
— Megaphone	**D10.15**	Y ☐ N ☐ U ☐ N/A ☐	
— Flipcharts or Image box	**D10.16**	Y ☐ N ☐ U ☐ N/A ☐	
— VCR and TV set	**D10.17**	Y ☐ N ☐ U ☐ N/A ☐	
— Generator	**D10.18**	Y ☐ N ☐ U ☐ N/A ☐	
— Screen	**D10.19**	Y ☐ N ☐ U ☐ N/A ☐	
— Projector (Movie)	**D10.20**	Y ☐ N ☐ U ☐ N/A ☐	
— Other:	**D10.21T**	Y ☐ N ☐ U ☐ N/A ☐	

Hygiene and sanitation materials

— Spray pump	**D10.22**	Y ☐ N ☐ U ☐ N/A ☐
— Disinfectant	**D10.23**	Y ☐ N ☐ U ☐ N/A ☐
— Protection materials (list)	**D10.24T**	Y ☐ N ☐ U ☐ N/A ☐

XI. Surveillance co-ordination

I. Existence of a surveillance co-ordination focal unit or person at district level

D11.1 Is there a surveillance co-ordination focal point within the district epidemic management committee?

XII. Satisfaction with surveillance system

I. Satisfaction with the surveillance system

D12.1 Are you satisfied with the surveillance system? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

D12.1T If no, how can the surveillance system be improved?

I. Opportunities for integration

D13T What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.)

HEALTH FACILITY QUESTIONNAIRE

Questions have suggested variable names e.g. HF1.1.

Identifiers

Assessment team: ID1	Type of Health Facility: ID5
Date: DATE	District: ID6
Interviewer: ID2	Region/Province: ID7
Respondent: ID3	Country: ID8
Name of Health Facility: ID4	Surveillance System : ID9

I. Percent of health facilities with national surveillance manual

HF0.1 Is there a national manual for surveillance at this site?

HF0.1Obs Observe national surveillance manual

I. Case detection and registration

I. Percent of health facilities that have a clinical register

HF1.1Obs Observed the existence of a clinical register — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of health facilities that correctly register cases

HF1.2Obs Observed the correct filling of the clinical register during the previous 30 days — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of health facilities that <u>have</u> standardised case definitions for the country's priority diseases

HF1.3 Do you have a standard case definition for: (each priority disease)? — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

HF1.3Obs Observed the standard case definition for: (each priority disease) — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of health facilities that <u>use</u> standardised case definitions for the country's priority diseases

HF1.4Obs Observed the respondent correctly diagnosing one of the country's priority diseases using a standard case definition — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

(Select one of the priority diseases in the facility's clinical register and ask how they diagnosed it — interviewer should have the standard case definition from MOH)

II. Case confirmation*

I. Percent of health facilities that have the capacity to collect specimens (sputum stool, blood/serum and CSF)

HF2.1	Are you able to collect sputum	Y ☐ N ☐ U ☐ N/A ☐
	Stool	Y ☐ N ☐ U ☐ N/A ☐
	Blood	Y ☐ N ☐ U ☐ N/A ☐
	CSF at this facility?	Y ☐ N ☐ U ☐ N/A ☐
HF2.1Obs	Observed the presence of materials required to collect	Y ☐ N ☐ U ☐ N/A ☐
	Stool	Y ☐ N ☐ U ☐ N/A ☐
	blood/serum	Y ☐ N ☐ U ☐ N/A ☐
	CSF	Y ☐ N ☐ U ☐ N/A ☐

I. Percent of health facilities that have the capacity to handle specimens until shipment

HF2.2	Do you have the capacity to handle sputum, stool, blood/serum and CSF until shipment at this facility?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
HF2.2Obs	Observed presence of functional cold chain at health facility	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of health facilities that have the capacity to ship specimens to a higher level lab

HF2.3Obs	Observed presence of transport media for stool at health facility	Yes ☐ No ☐ Unknown ☐ Not applicable ☐
HF2.4Obs	Observed presence of packing materials for shipment of specimens at health facility	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

III. Data reporting

I. Percent of sites that have appropriate surveillance forms for that site at all times over the past 6 months

HF3.1	Have you lacked appropriate surveillance forms at any time during the last 6 months?	Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of sites that reported accurately cases from the registry into the summary report to go to higher level

Observed that the last monthly report agreed with the register for 4 diseases (1 for each targeted group [eradication; elimination; epidemic prone; major public health importance])

HF3.21Obs Eradication	Y ☐ N ☐ U ☐ N/A ☐
HF3.22Obs Elimination	Y ☐ N ☐ U ☐ N/A ☐
HF3.23Obs Epidemic prone	Y ☐ N ☐ U ☐ N/A ☐
HF3.24Obs Major Public Health Importance	Y ☐ N ☐ U ☐ N/A ☐

* May have to develop table for the diseases

I. Percent of sites that reported each reporting period to the next higher level during the past 3 months

Number of reports in the last 3 months compared to expected number

HF3.31Obs Weekly: /12 times the number of sites

HF3.32Obs Monthly: /3 times the number of sites

I. On time (use national deadlines)

HF3.41Obs Number of weekly reports submitted on time: /12 times the number of sites

HF3.42Obs Number of monthly reports submitted on time: /3 times the number of sites

I. Percent of HF that have means for reporting to next level by e-mail, telephone, fax or radio

HF3.5 How do you report:

Mail ☐ Fax ☐ Telephone ☐ Radio ☐ Electronic ☐ Other ☐

I. Strengthening reporting

How can reporting be improved?

HF3.6T

IV. Data analysis

I. Percent of sites that:

Describe data by person (outbreaks, sentinel)

HF4.1Obs Observed description of data by age and sex — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Describe data by place

HF4.2Obs Observed description of data by place (locality, village, work site etc) — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Describe data by time

HF4.3Obs Observed description of data by time — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Perform trend analysis

HF4.4Obs Observed line graph of cases by time — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Have an action threshold for each priority disease

HF4.5 Do you have an action threshold for any of the country priority diseases? — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

H4.50 ***If yes,*** what is it? cases ☐ % increase ☐ rate ☐
(Ask for 2 priority diseases)

HF4.51N (Eradication)

HF4.52N (Epidemic prone)

I. Have appropriate denominators

HF4.6Obs Observed presence of demographic data at site (E.g. population <5 yr., population by village, total population) — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Use appropriate denominators

HF4.7Obs Observed rates derived from demographic data — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Use appropriate source of denominators

HF4.8T What is the source of your denominator?

V. Epidemic preparedness

I. Percent of health facilities that have a standard case management protocol for epidemic prone diseases

HF5.1Obs Observed the existence of a written case management protocol for 1 epidemic prone disease — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VI. Epidemic response

I. Percent of sites that implemented prevention and control measures based on local data for at least one epidemic prone disease

HF6.1 Has the health facility implemented prevention and control measures based on local data for at least one epidemic prone disease? — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of sites that achieved acceptable case fatality rates (e.g. 10% for Meningococcal CSM 1% for Cholera) during the most recent outbreak

HF6.2Obs Observed that the health facility achieved an acceptable case fatality rate for most recent outbreak — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VII. Feedback

I. Percent of sites that have received a report or bulletin from a higher level during the past year on the data they have provided

HF7.1 How many feedback bulletin or reports has the health facility received in the last year?

HF7.1Obs Observed at least 1 report or bulletin at the health facility from a higher level during the past year on the data they have provided — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Percent of health facilities that conducted at least semi-annual meetings with community members to discuss results of surveillance or investigation data

HF7.2 How many meetings has this health facility conducted with the community members in the past six months?

HF7.2Obs Observed the minutes or report of at least 1 meeting between the health facility team and the community members within the six months — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

VIII. Supervision

I. Percent of individuals supervised in the past 6 months

HF8.1 How many times have you been supervised in the last 6 months?

HF8.1Obs Observed supervision report or any evidence of supervision in last 6 months — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

I. Of those supervised in the previous 6 months, percent of individuals for which the supervisor from the next higher level reviewed surveillance practices appropriate to their level

HF8.2Obs Observed supervision report or any evidence for appropriate review of surveillance practices — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

IX. Training

I. Percent of health personnel trained in disease surveillance and epidemic management

HF9.1 Have you been trained in disease surveillance and epidemic management? — Yes ☐ No ☐ Unknown ☐ Not applicable ☐

HF9.1T ***If yes,*** specify when, where, how long, by whom?

X. Resources

I. Percent of sites that have:

Logistics

- Electricity
- Bicycles
- Motor cycles
- Vehicles

Data management

- Stationery
- Calculator
- Computer
- Software
- Printer
- Statistical package

Communications

- Telephone service
- Fax
- Radio call
- Computers that have modems

Information education and communication materials			
— Posters			
— Megaphone			
— Flipcharts or Image box			
— VCR and TV set			
— Generator			
— Screen			
— Projector (Movie)			
— Other:			
Hygiene and sanitation materials			
— Spray pump			
— Disinfectant			
Protection materials (list)			
Logistics		**(Yes = Y No = N Unknown = U Not applicable = N/A)**	**Number if applicable**
— Electricity	**HF10.1**	Y ☐ N ☐ U ☐ N/A ☐	
— Bicycles	**HF10.2**	Y ☐ N ☐ U ☐ N/A ☐	**HF10.2N**
— Motor cycles	**HF10.3**	Y ☐ N ☐ U ☐ N/A ☐	**HF10.3N**
— Vehicles	**HF10.4**	Y ☐ N ☐ U ☐ N/A ☐	**HF10.4N**
Data management			
— Stationery	**HF10.5**	Y ☐ N ☐ U ☐ N/A ☐	
— Calculator	**HF10.6**	Y ☐ N ☐ U ☐ N/A ☐	**HF10.6N**
— Computer	**HF10.7**	Y ☐ N ☐ U ☐ N/A ☐	**HF10.7N**
— Printer	**HF10.8**	Y ☐ N ☐ U ☐ N/A ☐	**HF10.8N**
— Statistical package	**HF10.9**	Y ☐ N ☐ U ☐ N/A ☐	
Communications			
— Telephone service	**HF10.10**	Y ☐ N ☐ U ☐ N/A ☐	
— Fax	**HF10.11**	Y ☐ N ☐ U ☐ N/A ☐	
— Radio Call	**HF10.12**	Y ☐ N ☐ U ☐ N/A ☐	
— Computers that have modems	**HF10.13**	Y ☐ N ☐ U ☐ N/A ☐	
Information education and communication materials			
— Posters	**HF10.14**	Y ☐ N ☐ U ☐ N/A ☐	
— Megaphone	**HF10.15**	Y ☐ N ☐ U ☐ N/A ☐	
— Flipcharts or Image box	**HF10.16**	Y ☐ N ☐ U ☐ N/A ☐	
— VCR and TV set	**HF10.17**	Y ☐ N ☐ U ☐ N/A ☐	
— Generator	**HF10.18**	Y ☐ N ☐ U ☐ N/A ☐	
— Screen	**HF10.19**	Y ☐ N ☐ U ☐ N/A ☐	
— Projector (Movie)	**HF10.20**	Y ☐ N ☐ U ☐ N/A ☐	
— Other:	**HF10.21T**	Y ☐ N ☐ U ☐ N/A ☐	
Hygiene and sanitation materials			
— Spray pump	**HF10.22**	Y ☐ N ☐ U ☐ N/A ☐	
— Disinfectant	**HF10.23**	Y ☐ N ☐ U ☐ N/A ☐	
— Protection materials (list)	**HF10.24T**	Y ☐ N ☐ U ☐ N/A ☐	

XI. Satisfaction with surveillance system

I. Satisfaction with the surveillance system

HF11.1 Are you satisfied with the surveillance system? Yes ☐ No ☐ Unknown ☐ Not applicable ☐

HF11.1T ***If no***, how can the surveillance system be improved?

I. Opportunities for integration

HF12T What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.)

ANNEX 13.0

LABORATORY ASSESSMENT

I. Objectives

General objective:

To rapidly assess the functional laboratory capacity for diagnosis of priority diseases for surveillance.

Specific objectives:

To employ a standardised tool for brief laboratory assessments to obtain easily available information about laboratory capability at all levels as part of the overall assessment of national surveillance systems.

To identify weaknesses in laboratory provision for priority disease detection and devise improvements ensuring that clinical specimens and information flow smoothly from district to provincial and national levels.

To enable the development of a plan of action to strengthen laboratory capacity for surveillance and control of priority diseases.

II. Key steps in carrying out the laboratory assessment:

Step I: Review of documentation and information in the country

1. Obtain pertinent documents from previous laboratory assessments performed in the country before assessment
2. National laboratory system (both public and private)
   a. Review the national laboratory services policy
   b. Description of organizational units within Ministry of Health (e.g. health centre, district, regional, national)
   c. Description of organizational units for other Ministries that have health care functions (e.g. Ministry of Education or Scientific Research). University medical schools often provide laboratory services and are valuable resources that should not be overlooked

d. Description of laboratories in the private sector. These include both independent labs and those in private hospitals. If a national accrediting organization for laboratories exists, consult this agency for information about the type and number of private laboratories.

Step II: Adaptation and modification of proposed generic questionnaire

The protocol recommends a generic tool for assessment, that needs to be modified for each level of the health system. This should take into account the degree of sophistication of the assessed level, as well as the type of laboratory facility to be assessed. These vary widely from country to country. Relevant questions would need to be identified for each level of laboratory assessed within the country. A careful review of each question is important and these should be modified or deleted as appropriate.

Train assessors in the use of the laboratory assessment tool and how to perform the associated brief laboratory inspection. The time spent administering the questionnaire and inspecting the laboratory may vary greatly, depending on the type of laboratory and the level of the health care system, and this should be taken into account.

***Step III*:** The field assessment

3.1. Using a representative sample of laboratories at each level in both public and private organizations, assess the following:

1. Building facilities and utility services
2. Laboratory equipment
3. Laboratory Staff
    a. Number (level of training)
    b. Supervision
4. Reagents
5. Tests performed
    a. Name of test
    b. Number per month
6. Laboratory management
    a. Hours of service
    b. Procedure manuals
    c. Specimen collection, labelling and handling

d. Reporting procedures

e. Quality control procedures and programme

1) Internal and external quality assurance and proficiency programmes

2) Equipment maintenance and repair

3) Supply procurement and management

f. Safety.

3.2. Inspect the laboratory and complete the inspection form to validate data reported in the interview.

a. Accessioning and reporting

b. Manuals

c. Equipment and reagents

d. Safety.

Step IV: Data analysis and report writing

Analyse data from country-wide laboratory assessment in regard to:

a. Overall function of surveillance system

b. Identification of specific laboratories deserving detailed laboratory assessment with a view to delineating and enhancing their role in the surveillance system.

The report writing could be done as part of the overall national surveillance system assessment report or separately if required.

Note: Follow-up assessments can also measure qualitative and quantitative changes in types of tests performed, number of each test performed per month and changes in proficiency by examining quality control data from internal controls and results of testing panels from reference labs.

LABORATORY ASSESSMENT TOOL

Checklist for diagnostic laboratory assessment

General Information

Name of the laboratory		
Address of the laboratory Telephone/fax/e-mail		
Level of the laboratory	Health Facility Provincial/State/Regional National Community/District	☐ ☐ ☐ ☐
Affiliation of the Laboratory (more than one may be applicable, e.g. Private and Academic)	Public Private Academic Institution NGO or Religious Institution	☐ ☐ ☐ ☐
Name of head of Laboratory		
Name of Laboratory Director		

Building facilities and utility services

How is the state of the building	good ☐	medium ☐	poor* ☐
Is the laboratory in a free-standing building ☐	or part of larger structure ☐		
Does the laboratory perform tests for:			
Bacteriology	Yes ☐	No ☐	
Virology	Yes ☐	No ☐	
Mycobacteriology	Yes ☐	No ☐	
Parasitology	Yes ☐	No ☐	
Mycology	Yes ☐	No ☐	
Cell culture facility?	Yes ☐	No ☐	
Is the laboratory connected to hospital service?	Yes ☐	No ☐	
How many rooms with bench space are there in the laboratories checked above?	Number:		
What % of the working day do you have the following services available?			
Electricity	<50% ☐	50-95% ☐	95-100% ☐
Running water	<50% ☐	50-95% ☐	95-100% ☐
Gas (including bottled)	<50% ☐	50-95% ☐	95-100% ☐

* Need to define at country level

Is there a back-up power source in case of power failure (e.g. emergency generator)?	Yes ☐ No ☐
If yes, what systems are protected?	
Refrigerators/freezers	Yes ☐ No ☐
Ventilation/AC	Yes ☐ No ☐
Computers	Yes ☐ No ☐
Other	Yes ☐ No ☐
	Not applicable ☐
What ventilation is provided?	
Windows	Yes ☐ No ☐
Electrically-powered ventilation (exhaust, not fans) system or air-conditioning	Yes ☐ No ☐

What types of communications systems are available?	√ all applicable	Number
Post	Yes ☐ No ☐	
Telephone	Yes ☐ No ☐	
Fax	Yes ☐ No ☐	
Satellite phone	Yes ☐ No ☐	
E-mail (no. computers)	Yes ☐ No ☐	
Internet (no. computers)	Yes ☐ No ☐	

Laboratory equipment

Type and number of items available in your laboratory	**Present**	**Number**
Refrigerator	Yes ☐ No ☐	
Freezing at –20°C	Yes ☐ No ☐	
Freezing at –70°C	Yes ☐ No ☐	
Microscope with oil-immersion objective	Yes ☐ No ☐	
Slides and coverslips	Yes ☐ No ☐	
Scale or balance	Yes ☐ No ☐	
Candle jars	Yes ☐ No ☐	
Other Anaerobe jar	Yes ☐ No ☐	
Magnifying lens	Yes ☐ No ☐	
Loop/needle handles	Yes ☐ No ☐	
0.01and 0.001ml calibrated loops	Yes ☐ No ☐	
Bunsen burner	Yes ☐ No ☐	
If no Bunsen burner, Electric heater or alcohol lamp to sterilise loops and needles	Yes ☐ No ☐	
Petri dishes (glass)	Yes ☐ No ☐	
Petri dishes (disposable)	Yes ☐ No ☐	
Test tube racks	Yes ☐ No ☐	
Staining facilities-sink and slide rack	Yes ☐ No ☐	
Adequate glassware for media preparation (flasks, graduated cylinders, etc.)	Yes ☐ No ☐	
Wash bottles	Yes ☐ No ☐	
pH paper	Yes ☐ No ☐	
pH meter	Yes ☐ No ☐	
Manual pipettes (e.g. Eppendorf)	Yes ☐ No ☐	
Water distillation system	Yes ☐ No ☐	

Type and number of items available in your laboratory	Present	Number
Low-speed centrifuge (hand or electrically powered)	Yes ☐ No ☐	
Autoclave - manually controlled	Yes ☐ No ☐	
Autoclave - electrically controlled	Yes ☐ No ☐	
Hot air oven	Yes ☐ No ☐	
Inverted microscope	Yes ☐ No ☐	
Fluorescent microscope	Yes ☐ No ☐	
Electron microscope	Yes ☐ No ☐	
ELISA plate reader	Yes ☐ No ☐	
Electrically-powered waterbath	Yes ☐ No ☐	
Warm air incubator	Yes ☐ No ☐	
CO_2 incubator	Yes ☐ No ☐	
CO_2 tanks	Yes ☐ No ☐	
Liquid nitrogen storage	Yes ☐ No ☐	
ELISA washer	Yes ☐ No ☐	
Safety cabinet- level 1 (operator protection. Open-fronted, unrecirculated airflow away from operator)	Yes ☐ No ☐	
Safety cabinet- level 2 (protects operator and material from contamination. Open fronted, filtered supply and exhaust air)	Yes ☐ No ☐	
Safety cabinet- level 3 (protects operator, material and environment from contamination-enclosed, negative pressure, HEPA filtered air supply and exhaust)	Yes ☐ No ☐	
Are all equipment functioning? (Ask this question after each equipment item, if response is NO, record below)	Yes ☐ No ☐	
If no, what items of equipment are not functioning?		

Laboratory staff and supervision for all microbiology and serology labs

Number of staff in each category	Number	% of staff available in lab
Supervisors — Medical/Scientific		
Supervisors — Technical		
Technologist/Technical (doing tests)		
Laboratory assistants (not doing tests)		
Clerical		
What is the highest level of microbiology training achieved by technical staff performing diagnostic tests? (state number of staff for each option)		
In-laboratory training only		
Diploma course or specific training course		
Degree level		
Other (briefly describe):		
Has training been conducted for your laboratory staff in the past year?	Yes ☐ No ☐	

Number of staff in each category	**Number**	**% of staff available in lab**
If yes, indicate the type of training and the number of staff trained		
Formal training at national lab	Yes ☐ No ☐	
Formal training on-site	Yes ☐ No ☐	
International training	Yes ☐ No ☐	
Laboratory staff supervision		
Who usually decides which tests to perform when the samples first arrive in the laboratory?		
The requesting clinician	Yes ☐ No ☐	
The technician	Yes ☐ No ☐	
Microbiologist/supervisor	Yes ☐ No ☐	
Laboratory protocol	Yes ☐ No ☐	
Who makes decisions about further testing if indicated?		
The technician	Yes ☐ No ☐	
Microbiologist/supervisor	Yes ☐ No ☐	
Are ALL tests reviewed before results sent for reporting?	Yes ☐ No ☐	
If yes, who reviews the results of tests (or test runs)?		
Only the technician performing the test	Yes ☐ No ☐	
Another member of the technical staff	Yes ☐ No ☐	
A supervisor/medical microbiologist	Yes ☐ No ☐	
Are ALL tests reviewed before results sent for reporting?	Yes ☐ No ☐	
If yes, who reviews the final report before it is sent to the requesting clinician or other appropriate recipient?		
Only the technician performing the test	Yes ☐ No ☐	
Another member of the technical staff	Yes ☐ No ☐	
A supervisor/medical microbiologist	Yes ☐ No ☐	

Reagents

What proportion of your reagents do you obtain from:	
A commercial supplier	%
From another laboratory	%
Prepared in-house	%
What type of water is used for preparation of media and reagents?	
Deionized	Yes ☐ No ☐
Distilled	Yes ☐ No ☐
Distilled and deionized	Yes ☐ No ☐
Tap water	Yes ☐ No ☐

Tests performed at the laboratory

The following table lists a number of diseases and diagnostic tests. Please note which tests are performed in your laboratory. For each disease, note whether or not you test any of the named specimens by any of the listed tests. (If you do not perform any tests for meningitis, for example, √ in the "No" column for all. If you perform a Gram stain on CSF for meningitis, but none of the other tests, √ in the "Yes" column for Gram stain, and "No" for the other meningitis tests.) Please give the approximate number/month of each test you perform.

Disease	Specimen type	Assay Performed	Yes	No	Number/ Month
Meningitis	CSF	a. Cell count			
		b. Latex agglutination			
		c. Gram stain			
		d. Culture			
		e. Identification tests			
		f. A-M susceptibility			
	S. pneumoniae	Optochin disks			
	N. meningitidis	Sugar fermentations			
	H. influenzae	X, V, XV factors			
	Blood	Blood Culture and tests b, e, f above			
Dysentery	Faeces	Microscopy of wet preparation			
		Culture			
		Identification tests			
		A-M susceptibility			
Watery diarrhea (cholera)	Faeces	Microscopy of wet preparation			
		Culture-TCBS			
		Culture-Alk. Peptone			
		Serotyping			
Plague	Bubo aspirate, sputum, blood	Stain			
		Culture			
		A-M susceptibility			
Tuberculosis	Sputum, CSF	Z-N staining			
		Rhodamine/Auramine staining and fluorescent microscopy			
		Culture			
		A-M Susceptibility			
Malaria	Blood	Thick/Thin film microscopy			

Measles	Serum Throat swab, conjunctival swab	IgM by EIA Other serological test Virus isolation			
Yellow fever	Serum Blood, post-mortem liver	IgM Virus isolation			
FUO/PUO (suspect typhoid or brucellosis)	Blood, faeces Serum	Culture Identification tests A-M susceptibility Serological tests (Widal, brucella agglutinins)			
Hepatitis	Serum	Anti-HAV IgM Anti-HBc IgM Anti-HbsAg Anti-HCV IgM Anti-HEV IgG			
Viral haemorrhagic fevers (any)	Serum Serum, other tissue specimens	IgM Virus detection			
Acute flaccid paralysis	Faeces	Virus isolation Virus typing			
HIV	Serum Blood	IgG by EIA Viral load Virus isolation			

Laboratory management

What are the normal hours/days of service of the laboratory?		
Number of days per week Hours per day	<5 ☐ 5 ☐ 6 ☐ 7 ☐ <6 ☐ 6-10 ☐ 11-23 ☐ 24 ☐	
If no 24-hour service, is out-of-hours or emergency service available?		Yes ☐ No ☐
If there is 24-hour service, number of staff at the following times:		Number
5 PM to 12 AM 12 AM to 7 AM		
How does the laboratory inform existing or potential clients about the services it offers?		
Verbally only (informal) Printed list/Brochure Does the technical staff have access to typed or written protocols (Standard Operating Procedures) for performing each test?		Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐

Specimen collection, labelling and handling

Proportion of samples collected on site	<20% ☐ 20-50% ☐ 50-80% ☐ >80% ☐	
Does the laboratory use standardised request forms to order laboratory tests?		Yes ☐ No ☐
Do request forms contain **ALL** of the following patient information: specimen source, date and time of collection, type of test requested?		Yes ☐ No ☐
Do request forms provide details or a link which enable the lab to contact the patient?		Yes ☐ No ☐
Are specimens that are received labelled with the patient's name and unique identifiers?		Yes ☐ No ☐
Does the laboratory provide a unique accession number for all specimens?		Yes ☐ No ☐
Does the laboratory have a logbook/electronic record of all specimens sent for diagnostic testing?		Yes ☐ No ☐
Are specimens discarded after testing, or are they stored?		Discarded Stored
Are standard criteria used for discarding specimens with prolonged transit times (time of collection to time of processing in lab)?		Yes ☐ No ☐
Does the laboratory during evening/night shifts accept specimens?		Yes ☐ No ☐
If yes, how are the following samples handled?		
Specimen	**Plated immediately**	***If no*, held at (√ one)**
CSF	Yes ☐ No ☐	4° Ambient temp. 35° ☐
Blood culture	Yes ☐ No ☐	4° Ambient temp. 35° ☐
Urine	Yes ☐ No ☐	4° Ambient temp. 35° ☐
Does you laboratory refer bacteriology isolates or serum samples to the Ministry of Health or a reference laboratory?		Yes ☐ No ☐
If yes, reason for referral (√ all)		
Confirmation		Yes ☐ No ☐
Identification of unknown organism		Yes ☐ No ☐
Test not performed on site		Yes ☐ No ☐
If yes, then by what method?		
By regular post service		Yes ☐ No ☐
By special messenger		Yes ☐ No ☐
Courier service		Yes ☐ No ☐
Other (describe):		
If yes, number of sample sent per month?		
Types of transport media used (√ all that apply)		
Trans-isolate		Yes ☐ No ☐
Amies		Yes ☐ No ☐
Stuart		Yes ☐ No ☐
Cary and Blair		Yes ☐ No ☐
Blood agar slants		Yes ☐ No ☐
Viral transport medium		Yes ☐ No ☐
Other (describe):		

Reporting procedures

Are records kept of the number and type of tests performed and results?	Yes ☐ No ☐
Does the laboratory use standardised forms to report lab results?	Yes ☐ No ☐
Does the laboratory have a list of diseases that are supposed to be reported to the Ministry of Health?	Yes ☐ No ☐
If no, does the lab staff know what diseases should be reported?	Yes ☐ No ☐
Does the lab provide regular reports of patients with notifiable diseases to any of the following Ministry of Health offices/institutions? (√ all that apply)	
District Health Office	Yes ☐ No ☐
State Health Office	Yes ☐ No ☐
Central Laboratory	Yes ☐ No ☐
National Communicable Disease Program	Yes ☐ No ☐
If reports are submitted, how frequently?	
Weekly	Yes ☐ No ☐
Monthly	Yes ☐ No ☐
Quarterly	Yes ☐ No ☐
Other	Yes ☐ No ☐
If reports are submitted, by what means are they sent?	
Line list	Yes ☐ No ☐
Telephone	Yes ☐ No ☐
FAX	Yes ☐ No ☐
Other (describe):	
Do you keep register of persons with notifiable diseases?	Yes ☐ No ☐
If yes, is the register computerised?	Yes ☐ No ☐
If computerised, are back-up copies (hard copies or disc) of data made and archived?	Yes ☐ No ☐
Quality control procedures and programs	
Is information gathered about laboratory turn-around times for specimens (time from receipt of specimen to issue of the report)?	Yes ☐ No ☐
Does the laboratory use any system for internal quality control?	Yes ☐ No ☐
Are internal controls included in each test run?	Yes ☐ No ☐
If yes, is the performance of these internal controls recorded and monitored over time?	Yes ☐ No ☐
Does the laboratory participate in any external quality assurance or proficiency schemes?	Yes ☐ No ☐
If yes, what programs?	
Bacteriology unknowns	Yes ☐ No ☐
HIV/Hepatitis panels	Yes ☐ No ☐
Antimicrobial susceptibility	Yes ☐ No ☐
Other (specify)	Yes ☐ No ☐

Does your laboratory keep records of deliveries of reagents and materials?	Yes ☐ No ☐
Does your laboratory have a system for regularly monitoring of quantities of reagents and materials so that there is warning if stocks become low?	Yes ☐ No ☐
Does the laboratory have problems obtaining and maintaining most supplies of essential reagents and materials?	Yes ☐ No ☐
If yes, what is the most important reason for not maintaining an adequate stock of reagents and supplies?	
Information about how to obtain materials	Yes ☐ No ☐
Long delay ordering and delivery of materials	Yes ☐ No ☐
Lack of funds	Yes ☐ No ☐
Inconsistent demand for test from physicians	Yes ☐ No ☐
Is the functioning of ALL electrical or mechanical equipment routinely monitored and recorded (e.g. microscope calibration, checking temperatures of refrigerators or incubators, calibration of pipettes or handling devices, autoclave function, etc.)?	Yes ☐ No ☐
Are calibration, maintenance and service records kept?	Yes ☐ No ☐
Safety	
Does the laboratory staff receive training in laboratory safety?	Yes ☐ No ☐
Is there a safety manual easily accessible to the laboratory the staff?	Yes ☐ No ☐
What methods are used for solid waste disposal?	
Autoclaving	Yes ☐ No ☐
Incineration	Yes ☐ No ☐
Burial with no pre-treatment	Yes ☐ No ☐
Other (briefly describe):	
What methods are used for liquid waste disposal?	
No treatment	Yes ☐ No ☐
Autoclaving	Yes ☐ No ☐
Chemical disinfection	Yes ☐ No ☐
Other (briefly describe):	
Is there a safety officer	Yes ☐ No ☐
Is there a safety SOP	Yes ☐ No ☐
Are new staff offered immunisation	Yes ☐ No ☐
What protective clothing/equipment is available for laboratory staff? (√ all)	
Gloves - latex	Yes ☐ No ☐
Gloves - other	Yes ☐ No ☐
Lab coats	Yes ☐ No ☐
Safety glasses/visors	Yes ☐ No ☐
Other (briefly describe):	
Are gloves worn for all manipulations of specimens, organisms, and reagents?	Yes ☐ No ☐
If yes, type of gloves	

Latex	Yes ☐ No ☐
Other	Yes ☐ No ☐
If no, are they worn	
Only for designated procedures OR	Yes ☐ No ☐
By the decision of the technician performing a test?	Yes ☐ No ☐
If the respondent has said YES to any question for Antimicrobial (A-M) susceptibility testing, please indicate which method was used:	
Disk diffusion	Yes ☐ No ☐
Agar dilution	Yes ☐ No ☐
Broth dilution	Yes ☐ No ☐
E-Test	Yes ☐ No ☐
Any anti-TB susceptibility testing method	Yes ☐ No ☐
Do use any internationally recognised standards for definitions of resistance/susceptibility (e.g., NCCLS, Stokes, DIN, SGRA)	Yes ☐ No ☐
If yes, then which one(s)?	

If the laboratory performs tests for any sexually transmitted diseases, e.g. syphilis, gonorrhoea, chancroid, please enter the information in the following table

Disease	**Specimen type**	**Assay performed**	**Number/Month**

If the laboratory performs any other virological assays using enzyme immunoassay, other serological assays, virus isolation or detection (including molecular tests, e.g., PCR), please list on the table below. Please append sheet if too numerous to fit on table

Disease	**Specimen type**	**Assay performed**	**Number/Month**

LABORATORY INSPECTION

Laboratory Inspection

Inspect the laboratory and complete the following form. Be courteous by first asking permission to open refrigerators, freezers, media storage closets and incubators to examine items contained therein. Some of the information collected during a walk-through will be used to verify information provided on the questionnaire. Make additional Notes as required, e.g. general cleanliness and organization of the laboratory, staff activity level, workload (specimens and inoculated plates present), and special facilities. Obtain copies of standard forms where indicated.

Accessioning and reporting

Review accessioning logbook(s) if available. Roughly calculate the number of specimens submitted over a one-month period. Record number: *samples/month*		
Review forms submitted with specimens. What proportion of specimens received are labelled with the patient's name and unique identifiers?	<50% ☐ > 50% ☐	
Are copies of report forms available?	Yes ☐ No ☐	
If yes, obtain copies of standardised reports forms that are used		
Manuals		
Type of manual	**Available**	**Date of last revision**
Test Procedures	Yes ☐ No ☐	< 1 year ☐ 2-5 years ☐ >5 years ☐ no date ☐
Safety	Yes ☐ No ☐	< 1 year ☐ 2-5 years ☐ > 5 years ☐ no date ☐
Quality control	Yes ☐ No ☐	< 1 year ☐ 2-5 years ☐ > 5 years ☐ no date ☐
Equipment and reagents		
Briefly look to see if reported number and type of equipment items is consistent with those reported on the questionnaire. Are findings generally consistent with responses above?	Yes ☐ No ☐	
Inspect equipment to see if performance indicators (e.g., temperatures) are regularly recorded		
Equipment item	**Sheet present**	**Temps. Recorded (per cent complete)**
Refrigerators	Yes ☐ No ☐	0% ☐ 1-50% ☐ >50% ☐
Freezers	Yes ☐ No ☐	0% ☐ 1-50% ☐ >50% ☐
Incubators	Yes ☐ No ☐	0% ☐ 1-50% ☐ >50% ☐
Inspect prepared reagents, dehydrated media, antibiotic susceptibility disks and prepared media to see if dates are recorded for the date prepared or opened and to see if expiration dates have passed.		
Proportion of reagents labelled appropriately?	None ☐ < 50% ☐ >50% ☐	
Expiration dates found?	None ☐ < 50% ☐ >50% ☐	
For reagents with dates - percent outdated?	None ☐ < 50% ☐ >50% ☐	
Inspect bacteriological media, both prepared and dehydrated, and reagents for signs of deterioration, e.g. drying, discoloration, hemolysis		

Deterioration noted in bacteriological media	None ☐ < 50% ☐ >50% ☐
Safety	
If biosafety hood is present, is it operational?	Yes ☐ No ☐ No hood ☐
Is a certification/inspection sticker present?	Yes ☐ No ☐ Not applicable ☐
If yes, date of certification?	< 1 year ☐ >1 year ☐ Not applicable ☐
Inspect laboratory for presence of biosafety equipment (gloves, sharps containers, safety glasses)	
Gloves present	Yes ☐ No ☐
Sharps containers	Yes ☐ No ☐
What proportion of staff are wearing gloves while performing procedures?	<1-50% ☐ >50% ☐ None ☐ Unknown ☐
Inspect equipment used for the disposal of biological wastes, e.g. autoclaves, incinerator. Is the hazardous waste disposal system operational?	Yes ☐ No ☐

ANNEX 14.0

ASSESSMENT OF GEOGRAPHIC INFORMATION SYSTEMS AND MAPPING RESOURCES

A Geographic Information System (GIS) provides an excellent means of collecting and managing epidemiological surveillance and programmatic information. These data can be easily visualised and analysed in a map, revealing trends and inter-relationships that would be more difficult to discover in tabular format.

Moreover, GIS allows decision-makers and planners to easily visualise health situation of populations in relation to their surrounding environment and existing health and social infrastructures such as health facilities, schools and water supply.

> **Specific diseases and health events can be mapped in relation to the number and location of health facilities or access to safe water supply in order to create a comprehensive picture of the health situation of a given community, district or nation. Such information when mapped together creates a powerful tool not only for monitoring of surveillance results but also for operational planning and targeting of interventions and resources to areas/communities in need.**

Key to the successful implementation of a GIS is the development of a standardised geographically referenced database that can be accessed/updated and used in common by different programmes and by different sectors at different levels (national, regional, district). This database serves as a common geographic platform within which all surveillance and programmatic data can be converged at the most appropriate level. **As such GIS lends itself as an entry point for integrating disease specific surveillance approaches**.

As a basic minimum a geographically referenced database should contain:

- Digitised administrative boundary maps from national to district levels
- Digitised maps of basic geographic features including rivers, roads, forests, elevation, land use and vegetation
- Geo-referenced databases of villages (e.g., Village names and geographic co-ordinates)
- Geo-referenced information on health facilities, schools and safe water points
- Vital demographic data down to village level.

In some countries, the use of GIS within the Health sector may still be relatively new or even non existent. However, it is often the case that GIS is being used in the same country by other sectors (e.g., Ministries of Water and Environment are often well established in this area). It is therefore recommended that a multi-sectoral approach to the assessment of GIS databases and resources be taken.

The following questionnaire aims to rapidly identify from the different sectors what GIS resources and essential information are existing in country. It is expected that the results of the questionnaire will provide sufficient baseline information in order to develop an implementation plan for the use of GIS to support national integrated disease surveillance.

ASSESSMENT OF DATABASES AND GIS RESOURCES

(FOR WORKSHOP)

I. Objectives

General objective

The general objective of the assessment of databases and GIS resources is:

- To facilitate the development of national strategies in countries in region for the implementation of GIS for surveillance, planning, management and monitoring of priority diseases. The strategy will be based on a multi-sector approach.

Specific objectives

The specific objectives of the assessment of databases and GIS resources are:

- To rapidly assess GIS/mapping resources and capacity in country, with particular emphasis on the availability of geo-referenced databases and digitised basemaps
- To explore and assess the different uses of GIS within national ministries of health, statistics, water, planning and education as well as within agency partners such as WHO, UNICEF, UNFPA
- To present the planned use for GIS/mapping within the Integrated Disease Strategy and propose/identify areas for collaboration with existing GIS/mapping activities and resources
- To identify existing geo-referenced databases of villages, health facilities, schools, population and available digitised basemaps of administrative boundaries, road and river network, forestry, land use and elevation
- To explore and identify ways by which to co-ordinate GIS activities at the national level, with particular emphasis on the development of mechanisms for improved data sharing in order to implement GIS more effectively

- Identify further technical assistance requirements in the area of GIS/mapping in order to develop a comprehensive implementation plan for GIS in support of an integrated disease surveillance strategy.

II. Proposed process

The proposed process is in summary as follows:

Pre-assessment phase

Step 1: The assessment team co-ordinates in advance of the assessment visit with WHO/Regional office and HealthMap/WHO/HQ to receive existing documentation of previous assessments and knowledge of existing GIS projects, capacities/resources/database.

Note: For countries in which HealthMap has already been working and for which standardised geo-referenced databases already exist, conduct an assessment of status of maintenance and updating of the databases and progress of GIS activities.

Step 2*:* The WHO Representatives in country will make arrangements for meeting with the following:

- Ministry of Health
- Ministry of Water
- Ministry of Education
- Ministry of Planning/Interior
- Dept of National Statistics
- National Geographic Institute
- UNICEF country office
- UNFPA country office
- Others.

In country assessment phase

Step 3*:* Conduct an interview with ministries and agencies above using the standardised tool for brief GIS assessments and obtain easily available information about the GIS resources and existing databases in each of the relevant sectors/ministries.

Step 4*:* Obtain description and detailed lists from each identified source of data/maps of the following:

- official list of names of administrative divisions (from administrative level 1 (region) to lowest administrative division (district or sub-district))
- official list of villages and code (if exists)
- official list of health facilities by type (public and private)
- official list of schools by type (public and private)
- official list of villages/communities with safe water supply

Step 5: Identify mechanisms for obtaining available existing geo-referenced databases and digitised base maps.

Post country assessment phase

Step 6: Compile report and send a copy to both WHO/regional office and to HealthMap/HQ for the development of a joint implementation plan for GIS for priority diseases in countries.

III. Methodology

Questionnaires administered to or interviews undertaken with national ministries and UN agency partners.

IV. Outputs

Details of current activities, capacities, resources and databases by sector.

Report to WHO/regional office and HealthMap/WHO/HQ.

QUESTIONNAIRE ON DATABASES AND GIS/MAPPING RESOURCES

Assessment team
Date
Respondent
Country
Name
Sector/Ministry/Agency
Address
Telephone
Fax
Email

I. General information

1. Is GIS used within your sector? Yes ☐ No ☐
2. ***If yes***, which departments/programmes are using GIS, for what purpose and at what level?

PROBE

- For each sector, ask what the system is being used for (e.g., assessing spatial distribution by region of a disease; monitoring results of disease surveillance; planning/targeting interventions etc.)
- Specifically ask at what level the GIS is operational (e.g., region, district, village etc.).

Name of Department	Purpose of GIS	Level (e.g. National, district, village, health facility level)
E.g. Guinea worm/surveillance	*Guinea worm: Monitoring results of surveillance data*	*Village level*
E.g. Malaria/surveillance	*Malaria: Morbidity/mortality monitoring at district level*	*District Level*
E.g. Malaria/control	*Planning bednet distribution*	*Village level*

II. Digitised basemap

1. Are digitised basemaps available of administrative boundaries? Yes ☐ No ☐

If yes, please complete the following table.

PROBE

- Firstly find out the administrative structure of the country (the name and number of admin level 1, 2 etc.)
- Then find out if digitised maps are available for each (often a digitised map may only be available for all of 10 Regions but only for 2 of the 20 districts)
- For each variable, ask the format that in which it is available
- Specifically ask for the source for each.

Administrative Boundaries	Name	Total Number	Digitised map available	Format	Source
Administrative Level 1	*E.g. Region*	*10*	*10*	*ArcView*	*Min. of Water*
Administrative Level 2	*E.g. Department*	*30*	*30*	*ArcView*	*Min. of Water*
Administrative Level 3	*E.g. Communes*	*300*	*In progress*	*?*	*Min. of Planning*
Administrative Level 4					
Administrative Level 5 (if exists)					
Health District (if different from administrative)	*N/A*	*30*	*30*	*MapInfo*	*Min of Health*
School District (if different from administrative)	*N/A*	*25*	*In progress*		*Min. of Education*

2. Are digitised basemaps available of other geographic features such as roads, rivers, elevation? Yes ☐ No ☐

If yes, please complete the following table:

	Digitised map		Format	Source
	Yes	**No**		
Road network	***ð***		*ArcInfo*	*Min. Planning*
Rivers				
Forest				
Land Use (e.g. rice fields, cultivated areas, swamps etc.)				
Elevation				

III. Geo-referenced databases

1. Are geo-referenced village databases available? Yes ☐ No ☐

If yes, complete the following table:

PROBE

- Explain what is meant by geo-referenced village database (i.e., a database of either villages or health facilities or schools in a country with geographic coordinates for each village/facility/school)

For each indicator (villages, schools, population etc.) ask the following questions:

- Ask if an official list of (villages) exist
- For each indicator ask what is the year of survey or last date of update
- Ask if an official code is available for each (village/school/health facility)
- Specifically ask if geographic coordinates are available for each (sometimes geographic coordinates are available for only the health facilities and not all villages)
- Ask if the data are available in a computerised database
- Ask what is the source of each dataset

- Note on *Population;* Specifically ask if population data are available for the village level (i.e., population census survey data)
- Note *on Source*; If the source provided is different from the sector of the respondent) make arrangements to visit the source and administer the same questionnaire
- Ask if any other *Other* information is collected with geographic coordinates that are not included in this list (for ex. Markets, dams) and obtain the same information for each additional indicator.

	Official list available		**Year**	**Official Code Available**		**Geographic Coordinates Available**		**Exist in computer-ised database?**		**Source of data**
	Yes	**No**		**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Villages	√		1991	√		√		√		Min. of Water
Population	√		1991	√			√		√	Nat. Statistics
Health Facilities	√		1995		√		√		√	Min. of Health
Schools	√		1998	√		√		√		Min. of Education
Safe Water	√		1992	√		√		√		Min. of Water
Other:										
Other:										

2. What is the procedure required to obtain a copy of part or all of the existing geo-referenced databases?

PROBE

- Present again objectives of using GIS for a Multi-disease approach to surveillance and desire for co-ordinated approaches to data management and mapping
- Ask how one can obtain a copy of any/part of the data available (e.g., through an official request to the Ministry or programme?

IV. Technical/Human resources

1. If GIS is being used in your office/sector, which software is used?

   Please ***ö***

ArcView	☐	Idrisi	☐
AtlasGIS	☐	ArcInfo	☐
MapInfo	☐	PopMap	☐
EpiMap	☐	Other (Please specify)	

2. Do you have/use GPS units (Global Positioning Units)? Yes ☐ No ☐

   If yes, what data are being collected? (Please list)

3. How many people have been trained in GIS in your sector? Please specify discipline of persons trained and the software on which they were trained.

Number of persons trained	Discipline of persons trained	Software
E.g. 4	2 Statisticans 2 Epidemiologists	MapInfo

4. Who is the GIS focal point in your sector/department/agency?

PROBE

- Specify that the GIS focal point should be the person to contact on technical follow up activities/queries etc.

Name	
Sector	
Address	
Tel	
Fax	
Email	

5. Have you any further technical assistance needs in GIS/Mapping? Please complete the table below:

	Yes Please ð	**No**	***If yes*, please provide details**
Training in GIS use	*E.g.***ð**		*E.g. Training in ArcView required: Epidemilogy block*
Assistance in database design/development			*Yes*
Database standardisation			
GPS surveying of villages			
Need for basemaps of boundaries/rivers etc.			*E.g. No district maps available*
Other: Specify			
Other: Specify			